

FLIGHT *simulator* WORLD



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THE FLIGHT SIMULATOR PILOT'S MAGAZINE!

This month's features...

Virtually Real

Getting as much realism as you can from your PC simulation experience

Horton's Hints
Tips and tricks for getting the most out of Microsoft Flight Simulator 2002

Also in this issue...

Round Robin Adventure.
Flying Online - Refine your instrument approaches.
Intel Northwood Processors.
DreamFleet Greatest Airlines 737-400 Review.
IL2 Sturmovik 115 Review.
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IL2 Sturmovik Review

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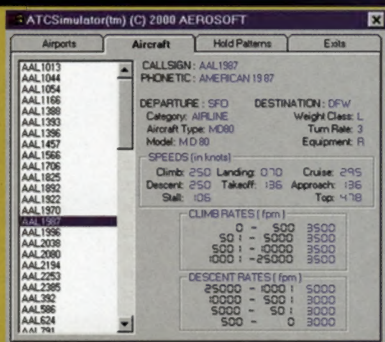
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To the uninitiated, they're all just blips on the screen, but to the seasoned Air Traffic Controller, which is what you'll become, it's a **challenging 3 dimensional puzzle** solved by coolly and calmly, sequencing, vectoring and stepping 'em down to create that "string of pearls" that has them lined up on final and ready to be handed over to the tower.

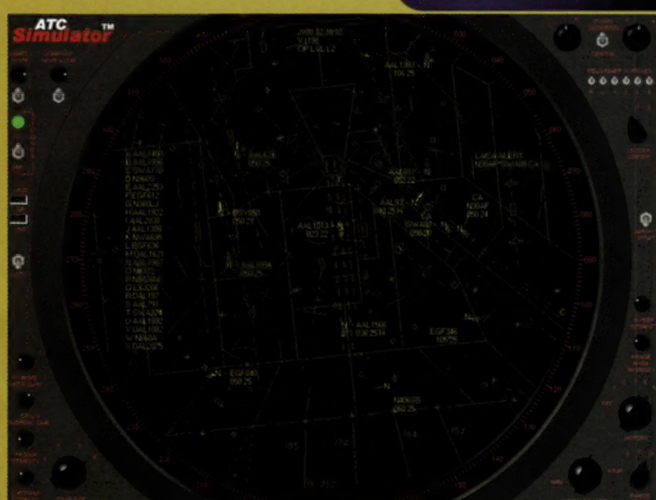
Sounds easy? Well think again! All you need is a 1 minute delay anywhere in the system or some bad weather and you're then going to have to **stack them up in a holding pattern** and then pick them off one at a time for landing when a slot becomes available.

Authentic flight strips tell you what's coming and when!

ARRIVALS [21]

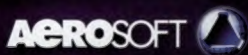
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Minimum System Requirements: IBM compatible Pentium II 300 or higher PC, Windows 98/2000/Me, 64Mb RAM, Sound Card.

Optional: Headset with boom microphone for voice recognition option. Success with voice recognition is not guaranteed. Some users will achieve great success with V/R and some will achieve less than satisfactory performance due to accent variations and quality of headset equipment.



One of your challenges is to turn chaos into orderly flow of traffic on final approach - the "String of Pearls". Shown here is SCT - Southern California TRACON.

Also order from any of these **online dealers**.

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Tim Dickens **Managing Editor**

From the Editor...

Welcome to the first issue of Flight Simulator World published by **PC Aviator!** Although the magazine now has a new look, the content will be the same. All of our regular authors and features have made the move over, and we are spooled up and cleared for **takeoff!** It is our hope that you will enjoy the new visuals, and continue to support us as you have in the past. We would very much like to hear your comments and suggestions. We would also like to start a question and answer column, and we invite you to send us your questions on flight simulation and virtual aviation. And send us technical inquiries on hardware related issues as well. Your hardware environment becomes more and more important as the simulation programs become increasingly *sophisticated*.

New Add-Ons

As predicted, now that *Microsoft Flight Simulator 2002* has been on the shelves for a few months, the 3rd party development community has built up some steam, and is now starting to come through with more aircraft, scenery and utilities oriented toward the new version of the sim.

As this trend begins to snowball, you will undoubtedly see more and more page space allocated toward reviews, so that we can keep you informed of what's out there. We will try very hard not to waste your time, and place as much emphasis as we can on things that we feel may benefit your virtual aviation environment. *Here again, if you don't see information on software or hardware that interests you, drop us a line.*

Keep the blue on top!

Microsoft

Admittedly, there will be times
when our interactive ATC won't be necessary.



No need for ATC when landing on Lake Erie. Or, taking off from the Amazon for that matter. But, fly over realistic cities or into crowded airspace, and the new interactive ATC is right there with you. You're flying in the real world with FlightSim 2002. Your perspective from the cockpit is 3D. Contrails flow from your engine. And waterways from around the world await. Climb in the cockpit. It's time to fly. microsoft.com/games/fs2002





pilot in command



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- 14. **Virtually Real** - Arturo Weiss gives us some pointers on how to make our virtual aviation environment as real as it gets. If you crave more realism, you can enhance your aircraft, weather, scenery or a combination of all of these, and create an environment that will make your virtual flying experience the very best.
- 19. **Horton's Hints** - Some tips and tricks on configuring Microsoft Flight Simulator 2002
- 23. **Round Robin Adventure** - Part II of our cargo run over the Rocky Mountain region of the US with Alpine Air, a real life cargo airline featured in Airways Magazine.
- 32. **Flying Online** - Doug Horton takes us through the basics of instrument approaches, and gives us some background on what we should know when flying in full sight of the online ATC controllers.
- 36. **Internet Gateways** - Rod White looks at some more networking hardware to help us find the ideal solution for networking two or more PCs together. There's definitely a lot of fun to be had with a home LAN. You can fly lead and wingman in a favorite PC combat/flight simulation with a buddy, or the kids. Or you can play Internet games from any, or all machines. The possibilities are truly endless.

NOTAMS



FSLandClass

Scenery Design Tool For Microsoft Flight Simulator 2002

Created by Burkhard Renk, FSLandClass is a tool to create new mesh textures with fitting auto-generated scenery for FS2002. You can design new mesh textures and auto-generated scenery in any region covered by the various add-on packs. The demo version is limited to one included area.

More Information

Web site: <http://fssharecenter.com/fslandclass/>

SRP: \$16.00 - + Area Packs (average \$12.00 each)



Amsterdam Schiphol 2002

Scenery for Microsoft Flight Simulator 2002 From Lago

Amsterdam Schiphol 2002 is a direct update of the scenery package released by Lago for FS 2000. The scenery was updated to look better and run faster in FS2002. This version is for FS 2002 only. Owners of the previous version of this scenery can install with the original Serial Number.

More Information

Web site: <http://fssharecenter.com/amsterdam2002/>



The Real Cockpit

Cessna 172 Skyhawk Cockpit Environment For Microsoft Flight Simulator

The Real Cockpit manufactures flight instruments that interface directly with Microsoft Flight Simulator via USB. They are designed to look and feel like real instruments, using servomotors, electronics and specially designed mechanical parts. Instead of staring at a video screen and using a computer keyboard to turn knobs and to press buttons, now a flight simulator pilot can see the instruments move before his eyes and adjust them as if he were in a real airplane.

More Information

Web site: <http://www.therealcockpit.com>

SRP: About \$3500.00 complete (see web site for details)



FSUIPC 2.82

Interface Module For Microsoft Flight Simulator

Peter Dowson released version 2.82 of his freeware FS interface module FSUIPC, including some fixes, new facilities and a correction for the "everlasting rain" problem in FS2002 weather. FSUIPC is a must have for flight simmers, to interface with the simulators weather, and other important functions.

More Information

Web site: <http://www.schiratti.com/dowson.html>

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Peter Dowson

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Why do it yourself when it can be done for you? Get CheckVer! **NEW**

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 FSUIPC SDK 9th Release
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 EpicInfo 3.91
 AdvDisp 1.94 **NEW**
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FSStarRC FS2002 Database **NEW**

All work with FS98, FS2000 and FS2002.

Important Note regarding FS2002: This software works ONLY with the FINAL, official, legal, packaged, gold version of FS2002. It will not work with Beta Versions of the sim.

SimCharts V2.0 From Jeppesen

SIMCharts provides easy access to the Jeppesen database of approach plates, airport diagrams, SIDs/DPs and STARs for almost any airport in the world. Jeppesen also continues their Combination Package series, providing terminal charts on CD, and printed enroute charts for US and European regions. This is a brand new release, representing a complete update of the worldwide coverage. There is no upgrade from previous versions.

More Information

Web site: <http://www.jeppesenpcpilot.com/>

SRP: \$29.95 - \$64.95 (see web site)



Final Approach

Approach Chart Atlas & Designer For Microsoft Flight Simulator 2002

By **Georges Lorsche**

An update to Final Approach, a long-standing shareware FS add-on, is available now for FS 2002. Final Approach is a powerful Approach Chart Atlas and Designer. It contains over 4500 copyright-free approach charts for use with the program. Special symbols and functions allow you to design and distribute your own approach charts.

More Information

Web site: <http://webplaza.pt.lu/public/glorsche/>

License fee: \$18.00 lifetime license



FSGenesis Mesh Central

Mesh Terrain Files for Microsoft Flight Simulator

Mesh Central specializes in free 38m+ downloadable Terrain mesh files. New files include: Devils Tower, Mt. Rushmore, Aspen/Vail, Colorado Springs, El Paso, Glacier National Park, Las Vegas, Lake Tahoe, Los Angeles, San Francisco, San Diego, Phoenix, Tucson, Salt lake City, plus many more.

More Information

Web site: <http://www.fsgenesis.com>



WidevieW 2002

Virtual Cockpit Utility For Microsoft Flight Simulator 2002

WidevieW 2002 is a freeware download utility that can be used to create virtual cockpits with multiple monitor support, using networked PCs. There is no limit on how many PCs can be linked together, and each of them can be configured to show a particular view, including outside views, maps and instruments.

More Information

Web site: <http://wideview.00server.com/>



AirPlan

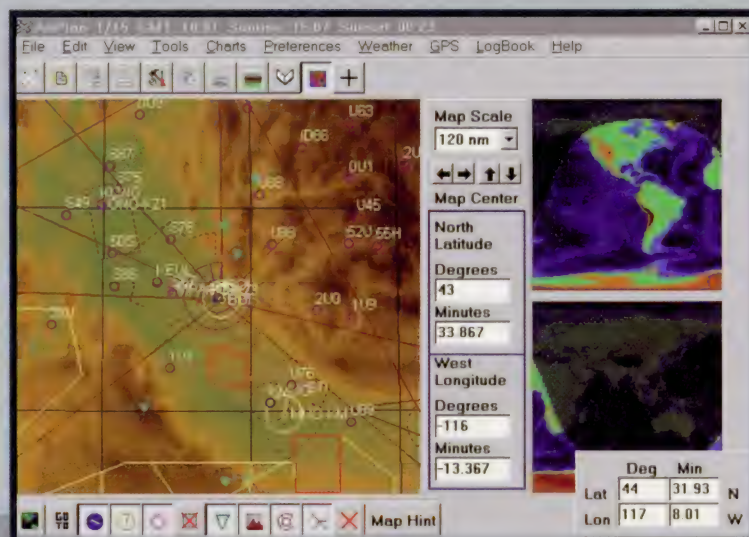
Flight Planning Utility

AirPlan is an easy to use, graphical user interface based flight planning program for general aviation pilots. The program now offers compatibility with Microsoft Flight Simulator 2002. AirPlan uses point and click route planning, and offers many features:

- Calculates airplane climb and cruise performance
- Automatic calculation of headings, airspeeds, time, distance,
- Corrections for magnetic variation and wind.
- High-resolution global color-coded terrain imagery in 1-minute blocks for the entire earth.
- A user editable database, allowing the creation and modification of airport data, navaid data, and waypoint data.
- Airport Diagrams - Click on any U.S. airport and you can view current Instrument approach and departure plates for that airport on the Echoplate web site.

<http://www.razorsedgesoft.com/airplan.htm>

SRP: \$89.00



World Air Routes

DVD Airline Videos

These DVD videos feature many of the world's airline routes. Their Britannia Airways SE Boeing 757-200 & Boeing 767-300 DVD has a cockpit demonstration and includes a 15 min presentation of the instrumentation as well as lots of other information from the pilots. It features 16 takeoffs and landings from the cockpit, and you can hear communications between the pilots and ATC. You also get a view of the scenery in flight and during the approaches.

More Information

Web site: <http://www.worldairroutes.com>

SRP: \$30.00



Greatest Airliners: 737-400 CD-ROM Edition

Aircraft For Microsoft Flight Simulator 2002 From Flight 1 Software

This award winning add-on from Flight1 and DreamFleet is now updated for Flight Simulator 2002 with new features such as an Aircraft Avoidance System (TCAS). It is available on CD-ROM and includes many other new features. A full review of the DreamFleet 737 can be found in this issue.

More Information

Web site: <http://www.flight1.com/>

SRP: \$29.95



Sabre vs Mig

Aircraft, Scenery and Missions For Microsoft Combat Flight Simulator 2

Flight 1 Software has released this long awaited package, bringing the Korean conflict into the Combat Flight Simulator 2 realm. This groundbreaking package also introduces jet combat to the simulator as well. You get challenging missions, accurate scenery, and seven flyable aircraft: 3 Mig-15's, in Russian, Chinese and North Korean colors; 3 F-86's from the 5th FIS, 4th FIS and the 51st FIS; and a F-51 Mustang. The AI aircraft include the F-82 Twin Mustang, Yak-9, F-84 Thunderjet, B-29 Superfortress and the Tu-2.

More Information

Web site: <http://www.flight1.com/>

SRP: \$24.95



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CoPilot has gained an incredible world-wide reputation over the last seven years as the best selling flight sim add-on of it's kind. Its simple point-and-click flight planning, superior GPS navigation, detailed printed flight maps, instrument approach plates and airport charts are all features that flight simmers have asked for.

CoPilot automates your flight planning. Just point-and-click to choose your destination. CoPilot finds the waypoints, specifies compass headings and calculates the distances. It's also ready to be used with CoPilot's new GPS instrument.

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Navigation as easy as glancing out the window!

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During World War II, the Catalina served as an intelligence-gathering aircraft. But it also served in search and rescue missions and performed small bombing raids as well. The *Legends of Aviation Series* pays tribute to these monuments of aviation with four authentic versions of this impressive aircraft: a land-based civilian model, a water-based civilian model as well as both a land and sea version of the military Catalina.

The Princess is visually breathtaking. The developers mastered special techniques such as shining landing lights, silky-smooth landing gear motion, working wipers and fully-functional custom instrumentation!

1-55755-441-2 \$29.95



Make your base at Sky Ranch and fly the outdoors of the Southwest. Grassy Meadows Sky Ranch (UT47) is an airport community in southern Utah, just six miles south of the town of Hurricane Cliffs. According to resident Nick Berg: "We are where the vast, cactus-covered Mojave Desert meets the lush grandeur of the Colorado Plateau's red rock country."

At Sky Ranch your home is adjacent to the taxiways. You'll taxi any of the five new aircraft from your driveway to the 4400' paved and lighted runway. Your new aircraft boast custom virtual cockpits and include the Twin Bonanza, Cessna 310, Piper Arrow II, Piper Aztec and the new Eclipse 500 personal jetliner!

1-55755-463-3 \$29.95

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By Arturo Weiss

There I was, getting ready to execute my instrument approach and landing after a long, two-hour IFR flight. The en-route portion of my flight was quite intense and fatiguing. After all, flying in solid instrument conditions, with all of the associated bumps and en-route changes, would take its toll on anybody.

So as I closed in on the airport, I began to set my radios to the appropriate frequencies. First, I listened to ATIS (Automated Airport Information Service) for the current altimeter setting, which I then set on the altimeter's Kohlsman window. I then focused on setting the proper ILS frequency into my receiver. In order, my next tasks involved reviewing

the approach, identifying radio aids, and adjusting my power settings. All of this as ATC (Air Traffic Controller) assigns me new headings and altitudes on a seemingly constant basis.

I finally broke out of the cloud layer and saw the airport ahead of me. "N23AW has the runway in sight," I inform the controller. "Roger, cleared for the visual approach Runway 17R," he responds. As I near the runway, I am forced to battle some pretty hefty winds out of the west. "Man," I think to myself, "I've got quite a crosswind here." To compensate for any drift, some left rudder is applied...setting up a crab angle.

While struggling to keep my Cessna 182RG on the proper alignment and glide path with the runway, I keep battling a

series of turbulent wind layers throughout the descent. Again, all of this comes as ATC hands me off to the Tower controller, who then clears me to land. Just over the runway threshold, I reduce my crab angle and add some aileron as I prepare to touchdown on the asphalt.

Two bounces later, I'm on the runway and turning clear of the active. The ground controller clears me to the parking area and, before you know it, I'm shutting the little Cessna's engine down. "Wow, what a flight!" I exclaim as I remove my headset. I decided to take a break and pressed pause on the keyboard. Oh, did you think I was flying a real airplane? I just as well would have been, because this was a very (gulp) realistic flight!

Benefits of Realistic Flying

So, you might be wondering just how real could a flight simulation be? My quick answer is: very! Of course, there are a lot of variables in making a simulation realistic, but once that's accomplished, you might just forget that you're flying a computer and not a real aircraft. It's all a matter of perception controlled by visual cues. Your eyes are the main tools in making the most out of the flight.

With the advent of the latest technology, coupled with lighting-fast CPU's, virtual images are truly out of this world. Add to that the sounds that are often captured in a real-life environment and you've got the next best thing to driving out to your local airport. The only thing missing is the smell of AVgas and the costly bill for the flight. In the real world a hundred Dollar hamburger really costs \$100!

What are the benefits of realistic flight simming? Well, how much time do you have? Seriously, there are quite a few, but let's try to boil it down to the most important reasons.

First of all, realistic flight simulation is an excellent training tool. If you're a real-world aviator, you should recognize the value of training. Recurrent training, practiced on an ongoing basis, will help a pilot improve upon his flying skills. Instrument navigation skills are honed as approaches,

en-route navigation, and holding patterns are consistently practiced. In this type of training, reality is truly recreated. The only references to flight are the instruments, which are often painstakingly reproduced on the monitor's screen. Allowing the user to practice visual navigation and other emergency procedures also enhances VFR flying. I'll go into suggested drills a little later on in this article.

Aside from the training aspect, realistic scenarios are just "plane" fun! Nothing beats flying the airplane of your dreams in a total real-world environment. Imagine zipping along in a Boeing 747-400 through the clouds as you hear the chatter of other aircraft and air traffic control. Add to that some weather excitement, like thunderstorms, and your palms will start to get real sweaty. It doesn't have to be that extreme, though. Realistic flight simming can consist of a flight around a grass field in a Piper Cub as you fight a little crosswind on the approach. It's up to you, and that's the beauty of it!

So, how do you set up a realistic flight environment? Let's take a look at several key areas:

Aircraft Settings

One of the first and foremost "adjustable areas" for realistic virtual flying is the aircraft itself. It really doesn't matter what type of aircraft you're flying, just the way

it was put together, and the way you configure it. Of course, it helps if it's an aircraft already in production. Nevertheless, some prototypes and even futuristic aircraft can be configured just as well. Personally, I enjoy flying the airliners, but that doesn't keep me from my other favorites, including aerobatic and other small GA (General Aviation) aircraft.

Each type has its own realistic configuration. For example, in the case of the airliners, I usually enable the auto-rudder system, which coordinates all aileron and rudder movements. You rarely fly uncoordinated in this type of aircraft, so generally speaking, there is no need to really mess with the rudders. This is a personal choice, and other "heavy iron" enthusiasts may disagree. I do the exact opposite for my aerobatic aircraft. Here I often fly uncoordinated maneuvers, like knife-edge flight, where full rudder is deflected with minimal aileron control.

Another example would be the gyroscopic effects of the propeller. As you may know, a spinning propeller places various loads and forces on an airframe. P-factor and gyroscopic procession are just a couple of examples. This, in turn, affects the handling of a prop-driven aircraft, and certain controls must be used to compensate for these forces.

In most flight simulations, the default aircrafts settings have these forces

Airliner departing into a low overcast



deselected, making for an easier flying platform. That's fine if you're just learning how to fly, but after a while it becomes a little boring, in my opinion. Selecting these forces will make your airplane a true flying platform, with all of the nudging that a real airplane would normally need. That's where the real fun begins.

Again, the trick is not in the type of airplane you fly, but how you set it up. As I mentioned earlier, a Piper Cub can be just as challenging as an F-15 under the right circumstances. And let's not forget our rotorcraft either. Uncoordinated flight in these aircraft is a lot more challenging than the default settings lead us to believe. The main rotor spinning overhead acts as a giant gyro, or top, and that in turn causes noticeable turning tendencies. Tough? It

checked every 100 miles of flight. Listen for an ATIS broadcast near you, enroute. If you're not lucky enough to have one, then find the nearest reporting station and use that data.

If flying at 18,000ft. or above (known as the flight levels) a standard altimeter setting of 29.992 is used. If you are using the ATC feature in Microsoft Flight Simulator 2002, be warned that proper altimeter settings are a must. Having the wrong altimeter setting means that you are indicating an incorrect altitude. The program's controllers will then ask you to fly the correct assigned altitude, and will only give you a few minutes to do so. Failing to correct this will cause a cancellation of your IFR flight plan with the famous words "Radar service terminated, frequency changed approved." Not a great

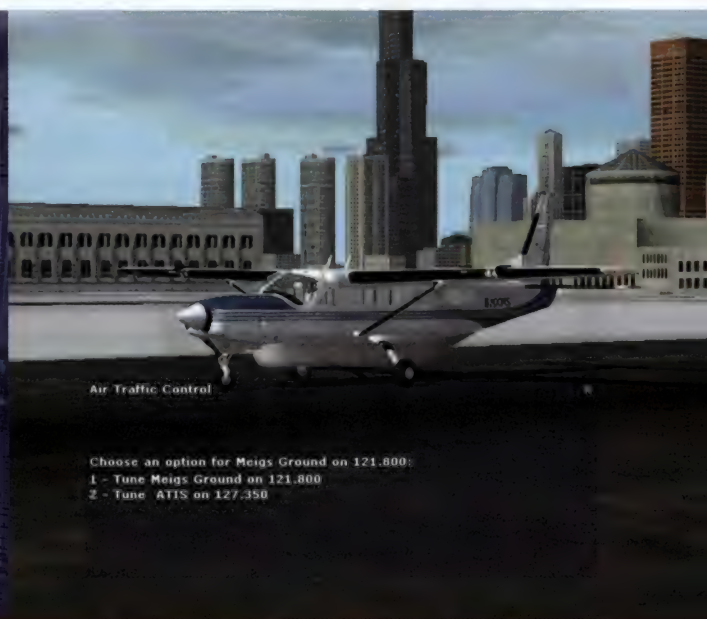
Weather

Weather plays a big role in flight, both virtual and real. Thunderstorms are one of the most obvious weather-related aviation hazards. In virtual aviation it's no different. In the real world, flying through a thunderstorm can literally tear an airplane apart. While in the virtual environment you do not suffer the same fatal consequences. Nevertheless, cyber thunderstorms can still give you a pretty good bump, with their severe turbulence and the lightning associated with the storm. These effects in MS Flight Simulator can give you the creeps too.

With the advent of Microsoft's Flight Simulator 2000/2002's downloadable real-world weather, you can actually download a line of thunderstorms that may be present



In Microsoft Flight Simulator, make sure you visit the Realism Settings menu.



Using the simulator's Air Traffic Control greatly enhances realism

might be, but then again, isn't challenge the fun part of flying?

Aside from the propeller and control settings, other items inside of the simulated cockpit can also be set for maximum realism. Of course, I'm referring to the instruments themselves. Once again, the default "easy levels" provided by many of the PC flight simulators reduces the worry of watching over these instruments. Real-world pilots, however, will tell you that a proper cockpit setup is vital to a good (and safe) flight. In other words, mistakes like not entering the proper altimeter setting, or forgetting to switch fuel tanks can lead you to serious problems.

These are problems faced by real-world pilots day in and day out. As a rule of thumb, an altimeter setting should be

feeling when you're trying to setup for an approach inside of a soupy cloudbank.

As I briefly mentioned before, fuel management is another thing to consider operating manually. In the default settings, you are given full tanks, and therefore, you rarely run out of fuel. Real-world pilots would love to have this luxury, but unfortunately we don't. So if you want to be truly realistic, set your fuel options under the proper conditions and plan your fuel burn accordingly. This includes figuring out how much fuel you will burn on each flight leg, and if refueling will be needed. If that's the case, the next decision will be just where to top off your tanks. And of course, the time to plan all of this out is when are figuring out, or filing your flight plan. Not when you are in the air!

somewhere on the globe. Imagine flying from one airport, then have to needle your way around storm cells while hearing the rumbling of thunder and seeing the flash of lightning all along. Talk about reality!

Wind is probably the biggest weather factor when flying. This weather marvel affects airplanes from start-up to tie-down. Navigation, takeoff, landing, and even taxiing around an airport are all affected by the wind. In a no-wind situation, pilots need not worry about any of this. When we add some wind, however, things become a little more exciting.

For example, crosswind landings are an art form which may take a little time to master. The learning process usually involves practicing these landings in incrementally stronger wind conditions until a certain

level of competency has been reached. Keep in mind, however, that airplanes have a crosswind limit, and learning your own personal limit is a lesson of it's own. Nevertheless, landing with a stiff crosswind is an acquired skill, and one that brings out the gray hair in all of us. This, my friend, is what reality is all about

While wind is a big factor that affects aviators, it is not the only one. Clouds obviously play a role. Cloud ceilings, that is, the height of the lowest layer above the ground, are critical. They dictate whether a flight can be flown by Visual Flight Rules (VFR) or Instrument Flight Rules (IFR). VFR rules dictate a minimum of a 1000-foot ceiling, and 3 miles of visibility. Marginal VFR is anything under 5 miles of visibility and a 3000-foot ceiling.

any radio navigation aids. If that seems too easy, then reduce your visibility to ½ mile. I guarantee that it will be a challenging, eye-opening experience.

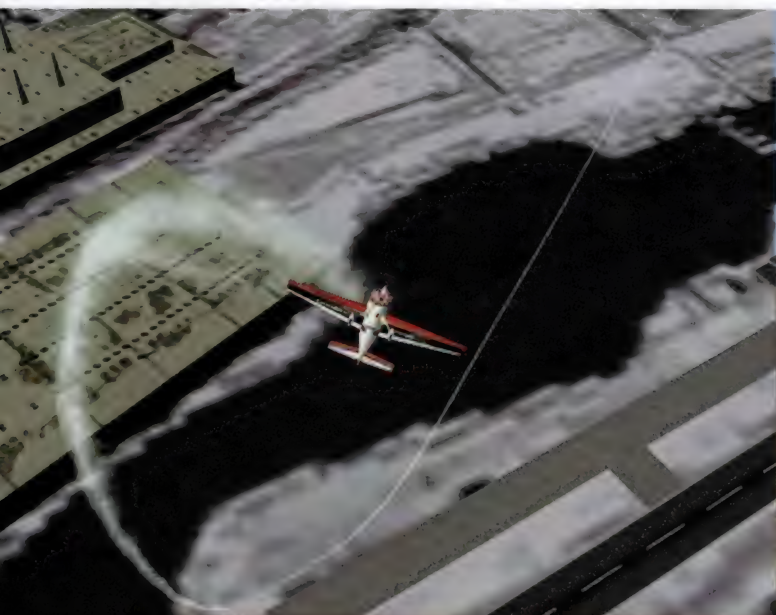
Scenery

One subject we definitely can't forget is scenery. As flight simulation has progressed, so has the quality and quantity of scenery. Even after being in the hobby for a while now, I'm still amazed at some of the visuals I see out there. Airport scenery is vital to a good (and realistic) simulation. Sure, we could do without some of the stuff out there, but why would we?

As a rule of thumb, most flight simulation programs offer more detailed scenery in some areas, while others are left a little "skimpy". Usually, the major metropolitan

processor to deal with, but if it can handle it, the details will be well worth the time. Nothing tops the "suspension of disbelief" one feels as they negotiate the complex taxiway layout of a large airport after landing. And seeing lots of jets or GA aircraft parked around a field goes a long way in enhancing realism as well. Remember, we're talking about promoting a realistic environment here, so all of this eye candy is very important.

Detailed airports are a great step towards setting up a realistic platform, but they definitely are not the limit. Imagine taking off from your favorite airport and then enjoying the countryside or urban sprawl of a familiar city. This is where area sceneries come in. As with airports, these sceneries are available in many formats, and offer



Propeller forces make this kind of maneuver possible



Realistic add-ons add spice to your simulation.

If you are not experienced in IFR flying, I suggest a little bit of experimentation. This is especially educational for those real-world pilots seeking an FAA Instrument rating. By setting these marginal weather conditions in your simulation program, you'll have a chance to see just how dangerous it is to fly in these conditions when not properly trained.

For those thrill-seekers among you, flying in low visibility conditions can be a challenging feat. Here is something to try this next time you want to put yourself to the test. Set the maximum visibility to 1 mile. Then set yourself up at a familiar airport, takeoff, and then try to navigate by pilotage (referring to natural or man-made landmarks) to another local airport. Follow roads, buildings and whatever else comes to mind, but resist the temptation to use

areas receive the extra sprinkle of buildings and 3D detail, while the smaller rural areas are left pretty thin. For those simulators that concentrate on a particular area of the country, like the now defunct Flight Unlimited series, the scenery is usually pretty detailed and leaves less to the imagination.

All in all, default scenery is pretty good these days. But many flight simmers crave more. For this group, we point out the add-on market. Whether freeware or a retail product, a wide variety of quality sceneries are out there, especially for those who really know what to look for. Airports can now boast a range of detailed objects, including hangars, taxiway marking and signs, antennae, moving Radars, and jetways for the airline terminals.

Sure, this is all extra stuff for your

various levels of realism. Some of the top visuals I've seen contain familiar roads, building and even road-signs for those meticulous flyers.

I remember once seeing a freeware area scenery for my old stomping ground of Oshkosh, Wisconsin, when I worked for the Experimental Aircraft Association. I enjoyed seeing the headquarters building, and even the parking lot as detailed as can be. The same goes for my hometown of Miami, Florida. I've seen many excellent sceneries, with so much detail that I could almost see the bathers on the sands of South Beach!

Setting Up Realistic Scenario's

Now that we've talked about the different elements needed to maximize realism in

your flying environment, let's look at some ways we can put all of this together into a realistic scenario. The easiest way to do this is to simply select a scenario already setup in the program. For example, Microsoft has always included different adventures and challenges in their Flight Simulator series. These range from flying through rainstorms to landing on lakes in an amphibious aircraft. Microsoft is not alone, as other simulations offer similar scenarios.

If you're the creative type, then you might want to set up your own realistic scenarios. It's not hard at all, and just requires a little bit of creativity and an adventurous spirit. This is where you can combine all of the elements we have discussed so far. Where do you start? It all depends upon what you want to do. If hopping from one airport to

might like it!

If IFR flying is more to your liking, then you're in the right ballpark. The flight sims on the market today are just fantastic for this level of realism. Most of these programs are great for setting realistic weather settings. Good IFR scenarios need one basic element: weather. We've already discussed the various facets of it a few little earlier. So, all that is needed is a combination of the right conditions, a good airplane, and voila! You're all set.

Real World Data

For the icing on the cake, I would recommend flying with instrument approach plates. This is what really makes IFR flying a true delight. If you're not familiar with these, approach plates are

Most flight simulator programs also offer tutorials on various aspects of flying and they actually do a pretty good job at providing the user with the basics.

That's it in a virtual nutshell

Remember, flight simming is already a great hobby. But if you crave more realism, you can enhance what you already have in many ways. Whether it's aircraft, weather, scenery or a combination of all of these, you can truly create an environment that will make your virtual flying experience the very best.

Just remember, if you do go for the ultimate in realism, the only one you'll scare is yourself. I know I have...many times.

Have fun!



The realistic consequences of a runway overshoot.



Realistic aircraft settings are mandatory for aerobatic flight.

another at low altitudes in a Cessna 172 is your cup of tea, then start off by selecting the highest scenery detail level that your computer can handle. Then throw in a little wind to make it a bit more challenging. And if you have enough computer horsepower, add some dynamic scenery.

Instead of using VORs or other radio navigation aids, why not follow a nearby highway or small road? If the scenery doesn't lend itself to this, or if you just want to try something else, why not try dead reckoning? This is the navigation method that uses time/distance calculations to navigate from point to point. Its more challenging than just following roads, or following a needle, and it can be a lot more interesting too. Try it, it's fun and you just

need navigations charts specifically designed for the execution of an instrument approach into an airport. These charts contain both a textual explanation and a graphical layout of the approach. You can find approach plates for all US airports online at the Echo Flight website. Or if you are willing to shell out some money, you might consider ordering Jeppesen or NOAA airport, or even sectional/airways charts from one of the aviation stores, like Sporty's.

Federal regulations only require pilots flying an instrument flight plan to possess the textual version of the chart, but most pilots I know prefer the graphical portion. To get familiar with approach plates, I suggest reading a training manual or watching a video on instrument approaches.

More Information

Echo Flight web site:

<http://edj.net/cgi-bin/echoplate.pl>

Sporty's web site:

<http://www.sportys-catalogs.com/sportyshome2.html>



Horton's HINTS4FS2002

By Doug Horton

Here are some more helpful **hints** for getting the most out of Microsoft Flight Simulator 2002. Some **hints** are basic, and some are more advanced. Take your pick. Our objective is to help share what we have learned in using the new version. There's no particular order. Again, pick and choose.

Exiting ATC

Is there a method to exit or terminate an ATC flight other than pressing ESC to end the flight? One way is by tuning the active COM1 or COM2 radio to another frequency. This seems to work, but if you're still hearing ATC reporting traffic, even though you're not being controlled, there's no way to end ATC without ending the flight, by pressing ESC, then End Flight.

Customizing Aircraft for ATC

Here's an example of how to customize aircraft for ATC. If you have the Professional version of FS2002, the easiest way to do this is with the included FSEdit program. If not, you can edit the individual Aircraft.cfg file, using a text editor such as Windows Notepad, or WordPad. But if you want to use FSEdit, one important hint is that *the*

plane's associated Aircraft.cfg file must define the aircraft as "editable". So it's a good idea to open the Aircraft.cfg file in your text editor and make sure this entry exists in the header information at the top:

editable=1

Otherwise, all of the menus in FSEdit will be grayed out when you select the aircraft.

In my case, I wanted to configure a private aircraft for ATC, a Piper Dakota, tail number N8441T. With FSEdit, I used the drop-down ATC list, for ATC Type, to find the Dakota and Selected it. Next, I selected PA28A from the model list, knowing that the aircraft is actually a model PA-28-236. Finally, I entered the tail number 8441T in the ID box.. This resulted in the following entries being made in the Aircraft.cfg file:

At the end of the [fltsim.0] section

```
atc_heavy=0
atc_id=8441T
atc_airline=
atc_flight_number=
```

In the [General Section]

```
atc_type=DAKOTA
atc_model=PA28A
```

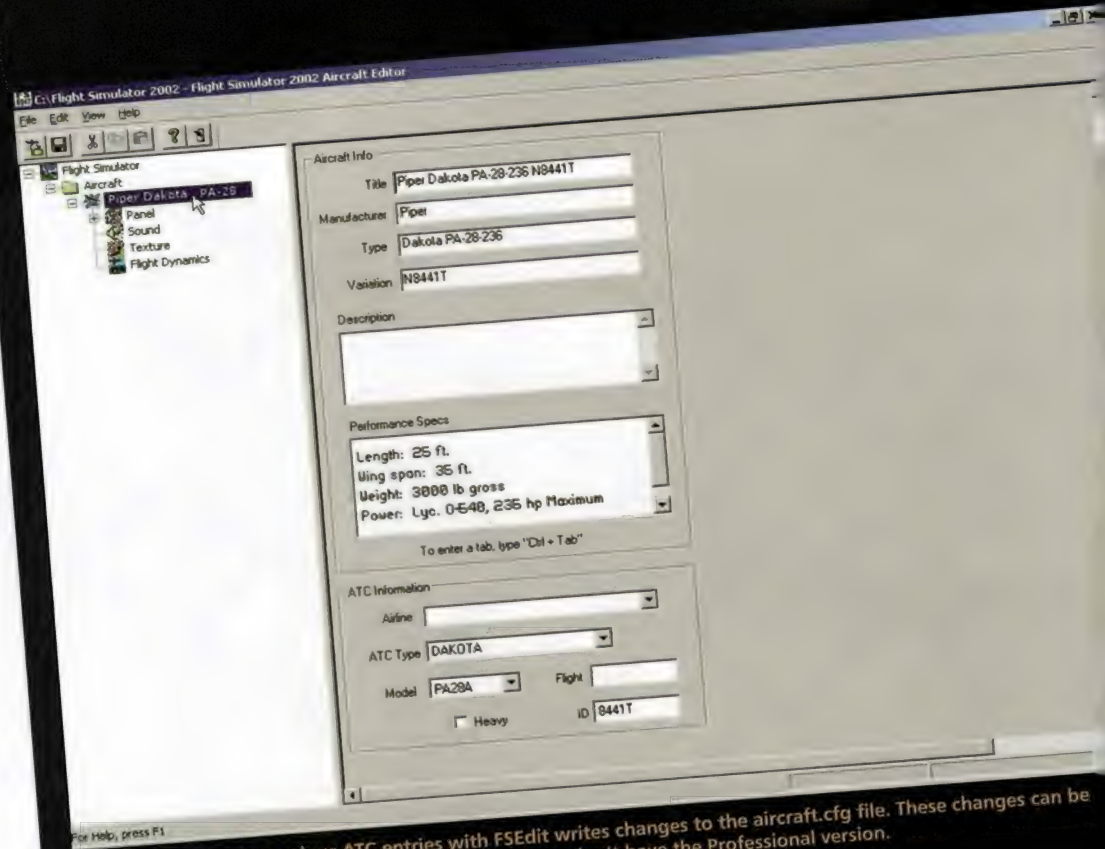
After making these changes, I tested them by starting FS2002, going to my Dakota aircraft, initiating ATC dialog with the ` key, then requesting taxi from Ground. Sure enough, I heard my simulated pilot voice and the Ground Controller say, "Dakota, eight four four one tango,...." That's me!

Emergency Landings

The FS2002 ATC feature does not have an Emergency Landing function, but there's a convenient workaround. To simulate an emergency landing, use these two procedures:

1. Open the GPS window, then look for a nearby airport and note its identifier.
2. Click on the -D- (direct) button twice. You'll see the Emergency screen, which lists the ten nearest airports. This is a feature built-in to most real GPS instruments.
3. Highlight the selected emergency airport using the up/down arrow buttons, then press Enter.
4. Change navigation source for the Autopilot to GPS (instead of NAV), but then select NAV in the Autopilot. The autopilot heading function will follow the GPS track to the selected airport while you continue preparing and descending for the emergency landing.
5. To get ATC for the emergency airport, if you are using the FS2002 ATC function, cancel IFR (if you are flying IFR), which then reverts you to VFR ATC. Then, the use ATC menu and the Select Airport option to request landing at the selected nearby airport, and follow ATC instructions for pattern entry and clearance to land.

This is still not completely realistic, because with an engine failure, for example, you'd want to land straight in, without entering the pattern. But until the built-in ATC has an emergency feature, it's the best you can do.



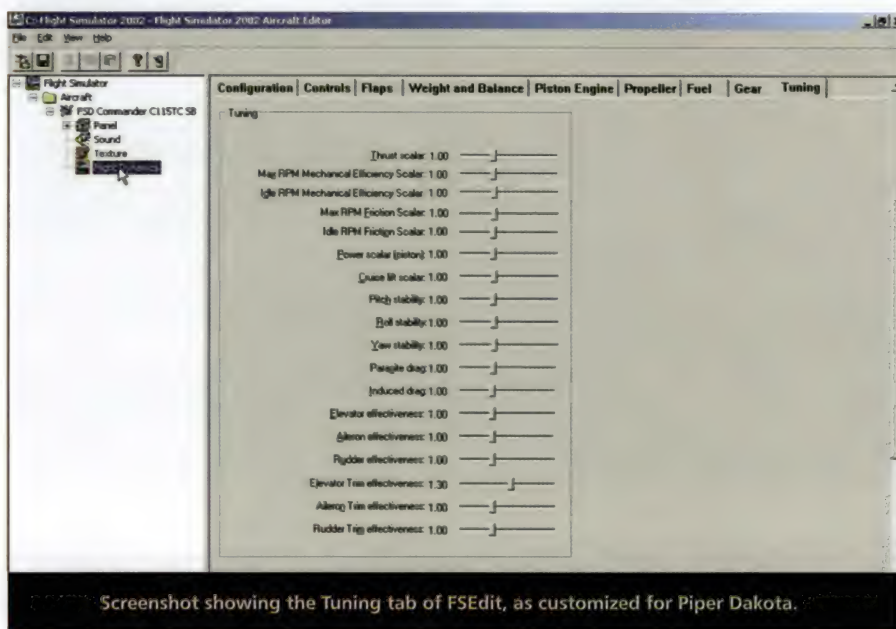
Selecting the various ATC entries with FSEdit writes changes to the aircraft.cfg file. These changes can be entered manually if you don't have the Professional version.



To simulate an emergency landing, click the GPS's Direct button (-D->) twice selects the Emergency landing interface.

AI Aircraft spot views

Use the **Ctrl + W** key repeatedly to open a new window and cycle through spot views of all current AI aircraft, when on the ground or in the air. Close the window by right clicking on it and clicking on Close Window.



Screenshot showing the Tuning tab of FSEdit, as customized for Piper Dakota.

Auto-tuning ATC Communications

Auto tuning is always on for the COM radios. For example, when you are handed off by ATC from one controller to the next, ATC prompts the menu item "tune 'next controller' on 'next controller's frequency'". You can select the menu item to have FS perform the tuning, but for more realism, if you tune to this frequency by hand, the ATC screen changes to the next dialog in sequence. For example, for starting a flight, if menu choice number one is tuning to the ATIS frequency, and you tune it by hand, the ATC menu will change to the next screen, on which tuning to Ground is the first choice.

Adjusting Cockpit Views

As mentioned in the last issue, for the new virtual cockpit view, you can precisely position the virtual cockpit view using keystrokes. It is also possible to position the default pilot's eye view in height, distance from the panel (without compromising outside zoom) and lateral distance from the center of the cockpit. This is done by changing a text entry in each plane's Aircraft.cfg file, under the [Views] section.

[Views]

eyepoint= 0.0, 0.0, 0.0

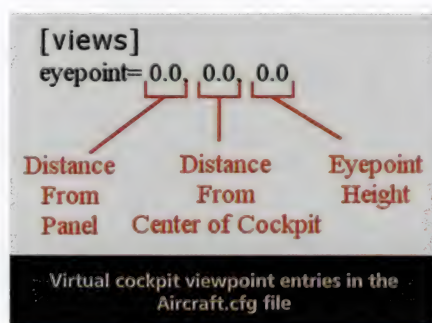
Adjust the first number for distance from the panel, the second number is the distance to center of the cockpit, and the third number is the eye view height. These numbers are in feet, and are accurate to 1/10th of a foot. Negative numbers move the point of view to the left in the case of distance to the center of the cockpit, and down in the case of eye view height.

The viewpoint for the regular 2D panel can be moved in the same way it was in FS 2000, by simply grabbing it with the mouse. Also, the view over the panel can be modified in the Panel.cfg file, for example:

[VIEWS]

VIEW_FORWARD_DIR=6.0,0.0,0.0

These parameters are for degrees of pitch, bank, and heading, so the system is somewhat different than the one for the virtual cockpit view.



Radio Setup

Note that there is a new [Radios] section in the Aircraft.cfg file for each aircraft. This is important to know about if you intend, for example, to use or add a second COM radio in add-on aircraft from older versions of MSFS. Case in point, if you add a COM2 radio to an older panel, your radios may be dysfunctional unless you also add a [Radios] section to the aircraft.cfg file.

Also, if the radio is a "flip-flop" type with standby frequencies, you'll need to make sure that's set up in the radio section. Another example is that marker beacon sounds (for ILS approaches) are now being routed through the audio panel. Please look at the default FS 2002 radio stack and note the audio panel at the top of the stack. You can select or deselect "MKR" and you will hear or not hear the marker sounds. One line option is now "marker.1" and you can specify whether markers are available or not.

From the C172 aircraft.cfg:

[Radios]

```
// Radio Type = available, standby frequency,
// has glide slope
Audio.1 = 0
Com.1 = 1, 1
Com.2 = 1, 1
Nav.1 = 1, 1, 1
Nav.2 = 1, 1, 0
Adf.1 = 1
Transponder.1 = 1
Marker.1 = 1
```

The audio panel is like a mixer panel. Audio from the radios is sent to it, and you can select whether or not they are audible. Normally, you would turn all avionics on, leaving the respective audio panel button off until you want to hear the radio audio, or in the case of navigation radios, the station ID.

Trim Effectiveness

Many users feel that the trim increments are too coarse, and accordingly, it's difficult to trim for straight and level flight. For those who fully understand how airplanes work, we should remind ourselves that in the case of elevator trim, you're actually trimming for a certain speed.

According to Microsoft, you can add the [flight_tuning] section from the Cessna 182 to the relevant aircraft.cfg file, which looks like the following:

[flight_tuning]

```
cruise_lift_scalar = 1.0
parasite_drag_scalar = 1.0
induced_drag_scalar = 1.0
elevator_effectiveness = 1.0
aileron_effectiveness = 1.0
rudder_effectiveness = 1.0
```




pitch_stability = 1.0
 roll_stability = 1.0
 yaw_stability = 1.0
 elevator_trim_effectiveness = 0.5
 aileron_trim_effectiveness = 1.0
 rudder_trim_effectiveness = 1.0

You will see that all these variables have default values of 1.0. If, for example, you set the "elevator_trim_effectiveness" variable to 0.1, then every "click" of the trim, up or down, will increment 1/10th of the amount you would normally get with a single click. The same is true for aileron and rudder trim, although most of us never vary these.

I recommend re-setting elevator trim effectiveness to 0.5 for finer trim control. If you have the FS 2002 Professional version,

these parameters appear and can be adjusted on the Tuning Tab of the Flight Dynamics menu in FSEdit. Again, make sure you change editable=0 to editable=1 in the aircraft.cfg file you wish to edit.

Minipanel View

MS has provided a new view, which is accessed by a single press of the W key. Formerly, this invoked the Wide view, removing the main panel. The second press of the W key now provides Wide view without the gauges. These gauges are common to certain categories of aircraft, and those who wish to modify which gauges are used (say, an Horizontal Situation Indicator instead of Directional Gyro), can do so by modifying the Panel.cfg file in the FS2002\Aircraft\default folder. You can select which instruments will be displayed here, in the same manner as you would an ordinary panel. →





Round Robin ADVENTURE

Mountain Cargo Run Part II

By Al Pelletier

This Round Robin adventure takes place in the States of Utah and Nevada, USA. It was flown with Microsoft Flight Simulator 2002, but can be flown with any flight simulator that has the required airports and nav aids included in its database. If you are using FS 2002, or any other simulator with ATC capability, follow the ATC directions as indicated in this adventure. If you are flying an older version of the simulator, simply disregard these directions.

This is the conclusion of our last exercise flying for Alpine Air, a cargo-carrying airline based out of Provo Utah. This Airline exists in real life, and was recently featured in Airways Magazine. This route is one of their regular daily flights. Alpine Air flies the Beech 1900 and you'll find one at www.simwings.net, in the Full Throttle/Utah-part-2 directory. You will also find a Boeing 737, which is suitable for this exercise, along with more maps and notes pertaining to this trip. Of course, there is nothing wrong with flying the default Beech King Air or the Boeing 737.

I flew the DreamFleet Greatest Airlines 737 in this article.

Round Robins

If you have done previous Round Robins, skip the next paragraph, jump right in, and have fun. For the experienced flyers, please be patient through all of the explanations, directions and extras. I direct this at newcomers to the flying world. I must stick to plain language.

For those who are new to this, Round Robins are published with the intent of having flight-simmers fly, look at the scenery, refresh our geography, practice our cross country navigation, do some approaches at different airports all over the world, and have some FUN.

In the messages, you will be getting info like: airport departure and runway numbers, VOR and ADF frequencies enroute, two or three middle airport destinations, and instructions for either VFR or instrument approaches. Then back to your point of departure (Round Robin). You will also be given ILS and LOM frequencies, visibility minimums, procedures etc. You will get info on the scenery needed to complete the flight and where to get it. Also, who created

the scenery (for non-commercial) and a little background on the geography of the area. After you do a few of these, you will have a much better command and understanding of the different types of published procedures. You will learn to handle a lot of information in a very short time, while still maintaining control of your aircraft.

May I suggest, that you READ the route a couple of times before starting out, so that you'll have the flight plan fairly clear in your mind. Especially in a fast medium jet, there isn't much time to spare and definitely no room for errors. Remember this rule: "Never let an aircraft take you somewhere your brain didn't get to five minutes earlier".

Note that for the purpose of this adventure, we will pretend that we are getting Radar vectors to different VORs or ILS interception points. In the "Real" world of today, aircraft usually get vectors to the interception points, to insure proper separation. I'm also assuming that you will have a good look at the Approach Plates for each segment. If they are not all published in the magazine, you can get them at my web site also. Check for address below.

Round Robin Adventure

Provo Municipal Utah (KPVU)

To

Cedar City (KCDC)

To

Las Vegas McCarran Intl (KLAS)

To

Reno Tahoe Intl (KRNO)

And back to

Provo Municipal (KPVU)

The total distance is approximately 1055.8 nm

First leg

Provo Municipal (KPVU)

To

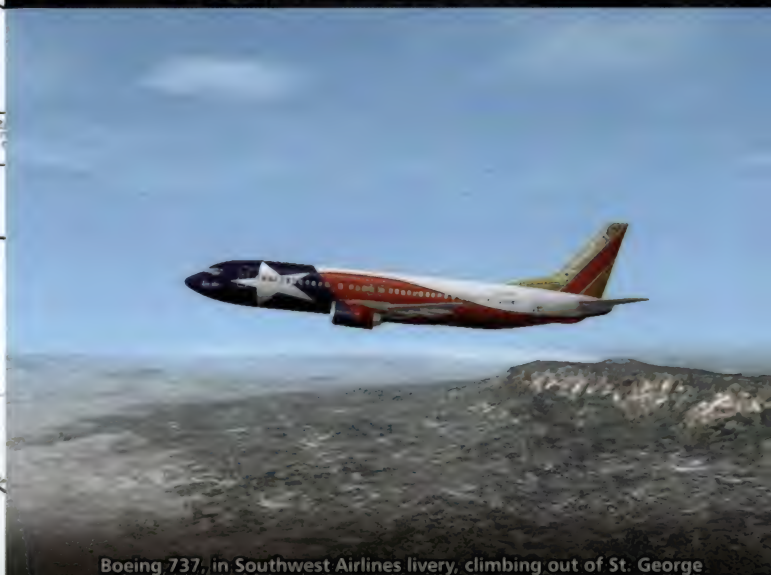
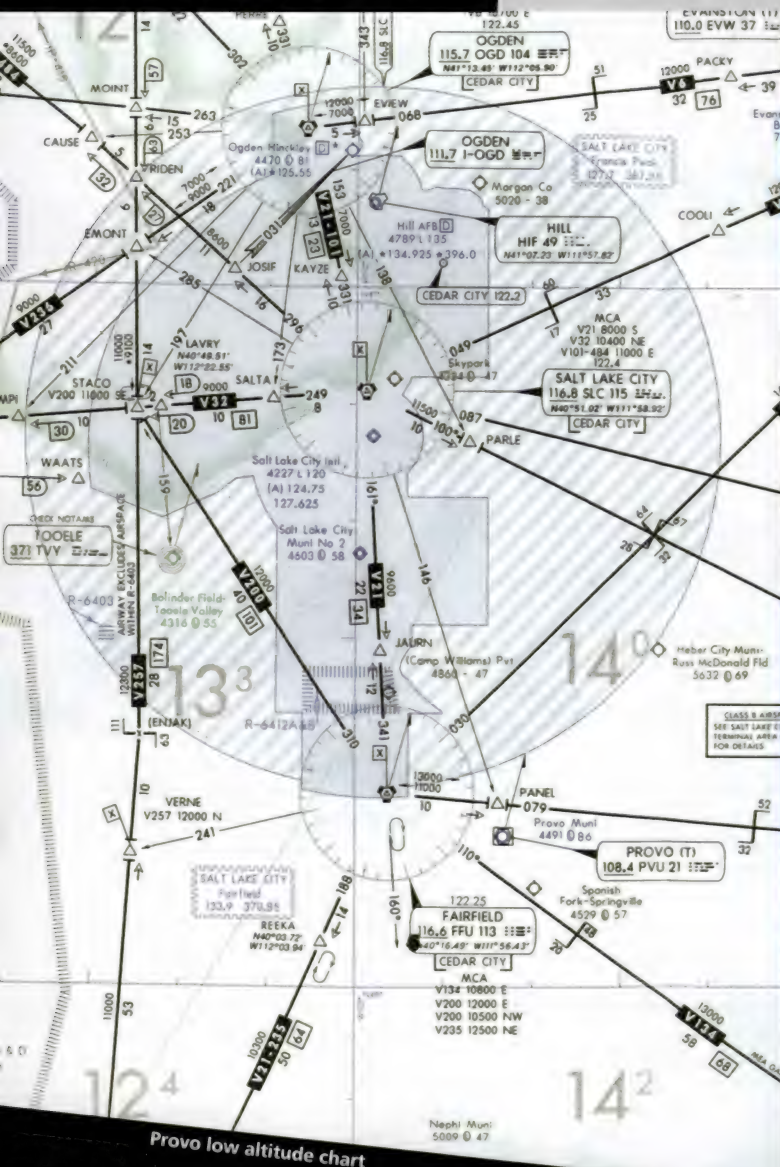
Cedar City Regional (KCDC)

Approximately 175 nm.

- Select Provo Municipal Airport - cargo ramp from your flight simulator menu.
- Opt for February 18th (winter) for the date.
- Set your clock to 08:00.
- Dial in the Fairfield (FFU) VOR at frequency 116.6 on your NAV2 radio. Also, dial in the Cedar City localizer (I-ECC) at frequency 110.1, and set the OBS course to 200 on your NAV 1 radio. This is in preparation for an ILS/DME approach to runway 20 at Cedar City (actual course 200 degrees, runway length 8653 ft., elevation 5626 ft.). If you are using FS 2002, and ATC directs you

to a different runway, you can obtain the runway/ILS data in Map View.

- Get ATC clearance to taxi to, and then takeoff from the active runway. If you selected the day and time I suggested, there will be a beautiful sunrise to watch.
- Make a left climbing turn to 19000 feet. This will place you over the lake. Circle until you are at 9500 ft. before proceeding to the VOR. Then track the Fairfield VOR to on top.
- Over the VOR turn left to heading 190, then dial in and track the Delta (DTA) VOR at frequency 116.10 on your NAV2 radio.
- On top of DTA, dial in and track the Milford (MLF) VOR at frequency 112.10 on NAV2.
- 20 nm before MLF descend to 11000 feet.
- Over MLF turn left to heading 153 and continue your descent to 8600 feet.
- Obtain your ATC clearance, and then



25

Approximately 320 nm

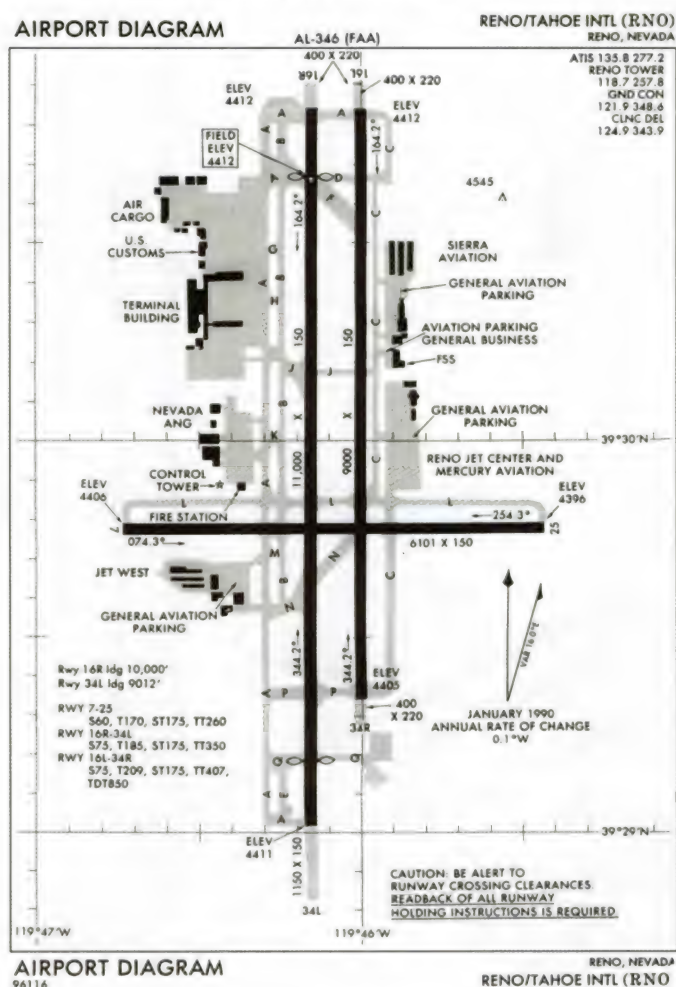
- Set your clock to 15:00. Set the weather at your discretion. Using real-time weather might be a good experience. Or for a real challenge, reduce visibility to minimums at Reno.
- Dial in the Las Vegas (LAS) VOR at frequency 116.9 on NAV 1, and set 251 on your OBS. Also, dial in the Beatty (BTY) VOR at frequency 114.70 on NAV 2.
- Obtain ground clearance to taxi to and takeoff from the active runway. Maintain runway heading to 17000 feet, then establish on the 251 radial of the LAS VOR. Remain on this radial until the HIDDEN Fix, which will be 42 nm out of Las Vegas.
- Over HIDDEN, turn right to heading 308 and track the Beatty VOR to on top.
- On top of Beatty, dial in and track the Coaldale (OAL) VOR at frequency 117.70.
- On top of Coaldale, dial in and track the Mustang (FMG) VOR at frequency 117.90, until on top. You will be passing over the YERIN and CHIME Fixes enroute to FMG.
- Enroute to FMG, dial in the Reno localizer I-RNO at frequency 110.9, and set course 164 on your NAV1 OBS in preparation for an ILS approach to runway 16R at Reno (actual course 164 degrees, runway length 11000 ft., elevation 4412 ft.). Again, if ATC vectors you to a different runway, you can obtain the runway/ILS data in Map View.
- 25 nm before the FMG VOR begin your descent to 10000 feet.
- Over FMG, turn right to heading 295 and continue your descent to 8200 ft..
- Maintain heading past the DICEY Intersection, and continue until 12 nm out of FMG. Then turn right to heading 119. You should be at approach speed and ready for landing from the FMG VOR to final approach. You will also have a very steep rate of descent from the DICEY Intersection to the runway.
- Over DICEY turn right to heading 164 and intercept the localizer (you're almost performing a 180 degree turn)
- 5 nm back you are cleared for a full stop landing at Reno. Check to make sure your gear is down.
- Land at Reno and request taxi to the Cargo area, which is located nearest the runway 16 threshold.

Approximately 402 nm

- Set your clock to 18:00.
- Dial in the Mustang (MFG) VOR at frequency 117.9 on NAV 2
- Request ground clearance to taxi to and takeoff from the active runway.

Sectional map of Provo, Utah

Reno/Tahoe airport diagram





Sectional map of Reno, Nevada



Sectional map of Las Vegas, Nevada

Adventure

- Make a right climbing turn to 20000 ft., and track the Mustang VOR to on top.
- On top of Mustang, turn to heading 038, then dial in and track the Lovelock (LLC) VOR at frequency 116.50, until on top. You will be passing over the WADDS Fix enroute to LLC.
- On top of LLC turn to heading 054, then dial in and track the Battle Mountain (BAM) VOR at frequency 112.20, until on top.
- On top of BAM, turn to heading 061, then dial in and track the Bullion (BQU) VOR at frequency 114.50, until on top. You will be passing over the OLGAA Fix enroute.
- On top of BQU, turn to heading 075, then dial in and track the Bonneville (BVL) VOR at frequency 112.30, until on top. You will pass over the SPATS and UHEPI Fixes on the way.
- Enroute to BVL, dial in the Provo localizer I-PVU at frequency 110.3, and set your OBS course to 131 on NAV 1. You want to request an ILS approach to runway 13 at Provo (actual course 132 degrees, runway length 8600 ft., elevation 4495 ft.)
- Over BVL, turn to heading 069 and continue to the STACO Fix, which is located 61.1 nm out of the BVL VOR.
- Over STACO, turn right to heading 132, and begin your descent to 10000 ft. Dial in and track the Fairfield (FFU) VOR at frequency 116.60 on NAV2.
- 20 nm before the FFU VOR, turn left to heading 100 and continue your descent to 8000 feet. Slow to approach speed to intercept the localizer. Tune in the Provo VOR at frequency 108.4 on NAV 2 for DME information.
- Continue with the approach. 5 nm back you are cleared for a full stop landing on runway 13 at Provo. Check to make sure your gear is down.
- Land at Provo Municipal and request ground clearance to the cargo area.

Welcome home!

Thanks to Chris Squire for test flying the route. Chris is a retired military pilot with over 12000 hours. Also, thanks to Major Tom Mitchell of Comox for all the logistic help.

Check back with us in next issue for another Round Robin!

Cheers and keep on reading Flight Simulator World
AI →

More Information

You can check the Alpine Air operation route and schedules at:
<http://www.g-web.net/alpineair0>

You can find the DreamFleet Greatest Airliners 737 on the Flight 1 website at: <http://www.flight1.com/>



HARDWARE

H A N G E R

By Rod White

New hardware is being released at a breakneck pace these days. Instead of trying to focus on all of this great new gear in separate articles, we will regularly put all this information together here. We will concentrate only on things that are worth checking out and can help enhance your PC flight simulation and gaming experience.

New IO Magic CD-RW drive



FLIGHT SIMULATOR V...

FSW

First up is the latest from IO Magic. IO Magic makes all kind of great products for the PC, and we have two new products from them to look at in this issue. First up is their latest CD-RW drive.

If you are into flight simulation, then chances are your hard drive is cluttered with add-on planes, scenery, utilities and various other applications that you have downloaded and plugged in. If you're anything like me, you don't want to delete anything, because you never know when you'll need it again. Or shall I say, actually use it again within the next, decade. A solid CD writer (CD-RW) is an essential tool for any simulation enthusiast, to help backup those files to CD-R or CD-RW media.

This latest drive from IO Magic is called the MagicWriter 24X10X40 CD-RW drive. At 40X reading speed, this is their fastest CD-RW drive yet. It writes CD/R discs at a blazing fast 24X speed, and CD/RW discs at 10X speed. Like most of the newer CD-RW drives on the market today, this one also offers Buffer-Under run technology, so you can actually do other things on your PC while burning a disc. Before this technology came on-line, you could end up with nothing more than a new coaster if you tried to burn a CD with other programs running at the same time.

One of the things I like most is that it includes a copy of the award winning Nero Burning Rom, which is by far the most robust CD-R/CD-RW application around. It's drag & drop feature makes it very easy to use for everything from creating backup archives to making audio CDs from downloaded MP3 files. Best of all, this new drive can be found on the street for around \$129-\$150, depending on where you shop. This is a lot less than most of the competition's 24X CD-RW drives.

The MagicWriter 24X10X40 drive, with its Nero Burning Rom software is not something you want to overlook, even if you have an older 8X or 10X CD-RW drive. It adds functionality, and the price is right!

IO Magic Typhoon Theater 5.1 Soundcard

It's hard to imagine anyone toying Philips or Creative Labs these days, but there are a few alternatives out there in the way of soundcards that you might want to consider. This card is the latest high-end solution from IO Magic. But the surprising thing is, it does not carry a high-end price tag!

The Typhoon Theater 5.1 is the third in a series of new soundcards from IO Magic that are based on the ESS Canyon 3D-2 sound processor. The first generation Canyon 3D sound processor was the Digital Signal Processor (DSP) that powered the Monster Sound MX400 soundcard from Diamond Multimedia a few years back. While it didn't topple what Creative Labs



had to offer at the time, it was nonetheless a solid four-channel sound card.

The new ESS Canyon 3D-2 sound processor offers up to 96 DirectSound3 hardware accelerated streams. The ESS Sensaura™ Technologies support includes:

- **MultiDrive™** for true multi-speaker Independent HRTF positioning in 3 Dimensions.
- **MacroFX™** enhanced near-field audio positioning for increased game play intensity.
- **ZoomFX™** to simulate the acoustic energy from large sound emitting objects, providing "big sound realism".
- **EnvironmentalFX™** 3D acoustical environment rendering, with full A3D 1.0, EAX 1.0, EAX 2.0, Direct Sound/Direct Sound 3D, and I3DL2 compatibility.
- **Hardware Speaker Equalization and S/PDIF out, for Dolby Digital AC-3 & Mini Disc (MD) support.**

Yeah, I hear you: "a bunch of marketing buzzwords". Yep, plenty of trademarks to go around, but what it boils down to is that this card offers many of the same kind of features you would find in a SoundBlaster Live! or Philips Edge

soundcard. Most importantly, the Direct Sound/DS3D and EAX support is in place, so it should work well with all current, and most previous simulation and game titles without a hitch.

It offers 2-channel, 4-channel or 5.1-channel support, and in most games and simulations it put out solid, quality sound. The kicker is that at around \$59.99, it's one of the least expensive 5.1 solutions on the market. IO Magic also includes a copy of Power DVD, for six-channel sound support using 5.1 Dolby Digital output. They also give you Yamaha's S-YGX50 soft synthesizer, an MP3 player/mixer, and a few other little software utilities. And then they throw in a trial version of the PC game Rune.

For the money it's a nice solution that offers 5.1 sound, with support all of the current industry standards for 3D positional sound. It may not be a groundbreaking solution, but it's not meant to be. It's nothing more than an outstanding, yet affordable 5.1 solution at an affordable price. You could easily blow \$60 on something else for your PC and get a lot less for your money.

If you have older onboard audio that's outlived its usefulness, you might want to check out the Typhoon Theater 5.1. It may be just what the doctor ordered.

Logitech Z-340 Speaker System





Logitech is not only known for outstanding pointing devices, keyboards and joysticks. They are also a force to be reckoned with in the arena of speaker systems for the PC too.

We filled you in on all that the high-end 4-channell 400watt Z-560 system had to offer in our last issue. At just \$199, for the money it can't be beat. The Z-340 is their least mid-range offering, and it's anything but bottom of the line in terms of quality. I'm willing to bet that the subwoofer included with this unit is the same one that's included with the Labtec Pulse system we looked at previously, considering that Logitech now owns Labtec.

This system consists of two small satellite speakers and a dual-chamber subwoofer unit. In the way of features, it's a very basic speaker system. But carries a very affordable price tag of only \$50! The sound produced is anything but basic, and you will be amazed at the clarity that these little satellite speakers pump out. The bass is punchy and solid to boot. It is rated at 33watts RMS; 6.5 watts per satellite and 20 watts for the subwoofer. That doesn't sound like a very powerful system on paper, but in use we found that, for a 3-piece system, you'd be hard pressed to find sound of this quality for double the price!

Versatility is another strong feature of this system. The stands for the satellites can be reconfigured for placement on a wall in just seconds. No extra mounting hardware is needed, except for maybe a screw or nail. This makes for placing the rear speakers where needed a piece of cake. The volume control, a headphone jack, and the power button can all be found on the right satellite. The power supply is housed within the subwoofer, so there's also no Wal-Mart variety power supply to hog two or more spaces on a power strip or electric outlet. One of my pet peeves with many of the speaker systems on the market.

If you're looking for a small, yet inexpensive 3-piece system that packs a punch, then you might want to consider the Z-340s. They take up very little desktop real estate, and deliver sound quality that rivals most \$100+ speaker systems.

Logitech Wheel Mouse Special Edition Optical

If you're in the market for a new mouse, Logitech has a lot of new PC rodents to choose from. My mouse of choice has been the iFeel Mouse from Logitech for many months now. The look and feel of the iFeel mouse in-hand is perfect. However, I never did find much use for the feedback effects it produced, so I usually just turn that off. Just when I thought that I had the only mouse I'd need for at least another year, they had to go and release the Wheel Mouse Special Edition Optical.

Essentially, the Wheel Mouse Special Edition Optical looks like the iFeel mouse, minus the iFeel Force Feedback guts. Feature-wise it offers a wheel and three buttons, and by design it's made to accommodate both right and left-handed users. It also shares the benefit of being an optical mouse, but the Wheel Mouse Special Edition Optical is 2X faster due to the updated optical technology that it employs. Cosmetically it's decked out in a ravishing cherry red finish, so it looks as good as it works!

At \$29.99, the Wheel Mouse Special Edition Optical is an outstanding mouse to consider if you're looking for an optical USB mouse that employs the latest technology. It doesn't get much better than this for the money!

Logitech Cordless Freedom iTouch

Logitech offers some of the best wireless keyboards on the market. This new offering employs their new Zero Tilt design, which makes it a very sleek, low profile keyboard. At top center you'll find an array of buttons to control speaker volume up and down, and forward, back, stop, play and mute for Windows Media Player, or just about any other multimedia application. The Media button also allows you to switch between applications.

On the left side towards the top, you will find four more buttons for Internet shortcuts. These are labeled Finance, My Sites, Community and Favorites. All of these can be programmed to function as shortcuts to any website, and or as buttons to access Windows applications with the iTouch software interface. Five more buttons can be found on the top right hand side of the keyboard labeled Email, Shopping, iTouch, My Home and Search. These too are shortcuts to the web, and like the others, can be programmed to perform a variety of different functions. By default, "Search" will take you to Google, "Email" will launch Outlook Express for you, and so on.

The mouse is an ambidextrous mouse, so both right and left-handed users are accommodated. While the mouse isn't optical, it can be used as a USB device. So for a mouse with a ball it works extremely well, with excellent performance. And it is comfortable in-hand. This gear can be setup via standard PS2 mouse and keyboard connectors, or via USB, the choice is yours. Best performance is to be had via USB.

The cordless functionality does require batteries, and thankfully Logitech provides them. So you're good to go right out of the box. They claim that they should last a good 3-4 months, but in use we have never found this to be the case. So you might want to consider some rechargeable batteries if you get a lot of use out of your PC. That aside, there's no need for a line of sight with the receiver, and the keyboard and mouse both work very well, even at an 8 ft. distance.

The SRP is \$79.99 from Logitech's website, but if you shop around this combo can be had for as little as \$50-\$60 online. This is very reasonable for a cordless keyboard and mouse with the features that the Cordless Freedom iTouch has to offer. →



You can find more information on this hardware from the manufacturer's web sites:

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- MagicVideo MX200**
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IO Magic: <http://www.iomagic.com/>

Logitech: <http://www.logitech.com/>



Flying ONLINE

By Doug Horton

In the last issue, our training for online flying included a description of arrival procedures and STARs (Standard Terminal Arrival Route). Prior to the arrival, of course, is the approach and landing. Approaches fall into two categories: visual and instrument. Visual approaches are generally simpler, and with online flying, pilots can expect that visual approaches will usually be "straight in" rather than "landing pattern".

However, with the new 3D cockpits in FS2002, and the ability to smoothly pan the exterior view, pattern approaches are much easier than in all previous versions of Microsoft Flight Simulator. But instrument approaches while flying online is the subject of interest in this issue, and I will blend in

some of the details and intricacies about instrument approaches that I learned while getting my real instrument rating last year.

When I began the training for my instrument rating, I presumed that I knew a great deal about approaches from simulator flying. I knew how to find ILS frequencies in the flight simulator airport and facilities directory that is built into map view. I knew how to tune in ILS frequencies on the navigation radios, intercept the localizer and glideslope, and about "flying the needles" using the VOR 1 and Horizontal Situation Indicator (HSI) instruments.

To my surprise, I learned that I knew nothing about the concepts of entering approaches with a procedure turn, using a planned descent rate, "going missed"

at the decision altitude, how the marker beacons related to the approach, or how ILS approaches include circling-to-land on a runway other than the approach runway. Of course, you can do all of this in the simulator, but unlike real world flying, there is no Air Traffic Controller watching. However, when flying online, there may very well be something akin to this watching your every move. So these are all really good skills to have in the virtual aviation world as well.

I also knew nothing about VOR, NDB, and the several other types of approaches from simulator flying. These all exist in the real world. Though we'll focus on ILS approaches for our online flying, in real flying, all types of approaches are very important. Later in this article, I'll provide a

recent example of why they are important.

So, let's get into learning more about ILS approaches. Certainly, we can fly online with only minimal knowledge, like finding the ILS frequency, getting vectored by the Approach Controller for an ILS approach, intersecting first the localizer and glideslope, and then flying to land on the active runway. We can even use the built-in flight simulator autopilot approach (APR) feature to automatically lock-on to the localizer and glideslope.

But if we also have real weather fed into the simulator, we can't always see the runway. When, how, and what do we do? Or as my flight instructor friend Eric says, "How low, how long, how do I get out?" This introduces what I feel is the greatest lack of knowledge by average flight simulator users and online flyers: the vertical profiles and missed approach procedures of ILS approaches. This introduces another aspect of "getting real" with PC flight simulation.

Next, a small disclaimer: As I attempt to convey some knowledge and understanding of instrument approaches in the remainder of this article, please recognize that it's a complicated subject, and I may inadvertently err in my explanations. On the other hand, I believe my explanations are entirely adequate for most online pilots. Also, I must mention that there are dozens of related acronyms in flying,

and I will mention many of them because you may read or hear them from online air traffic controllers.

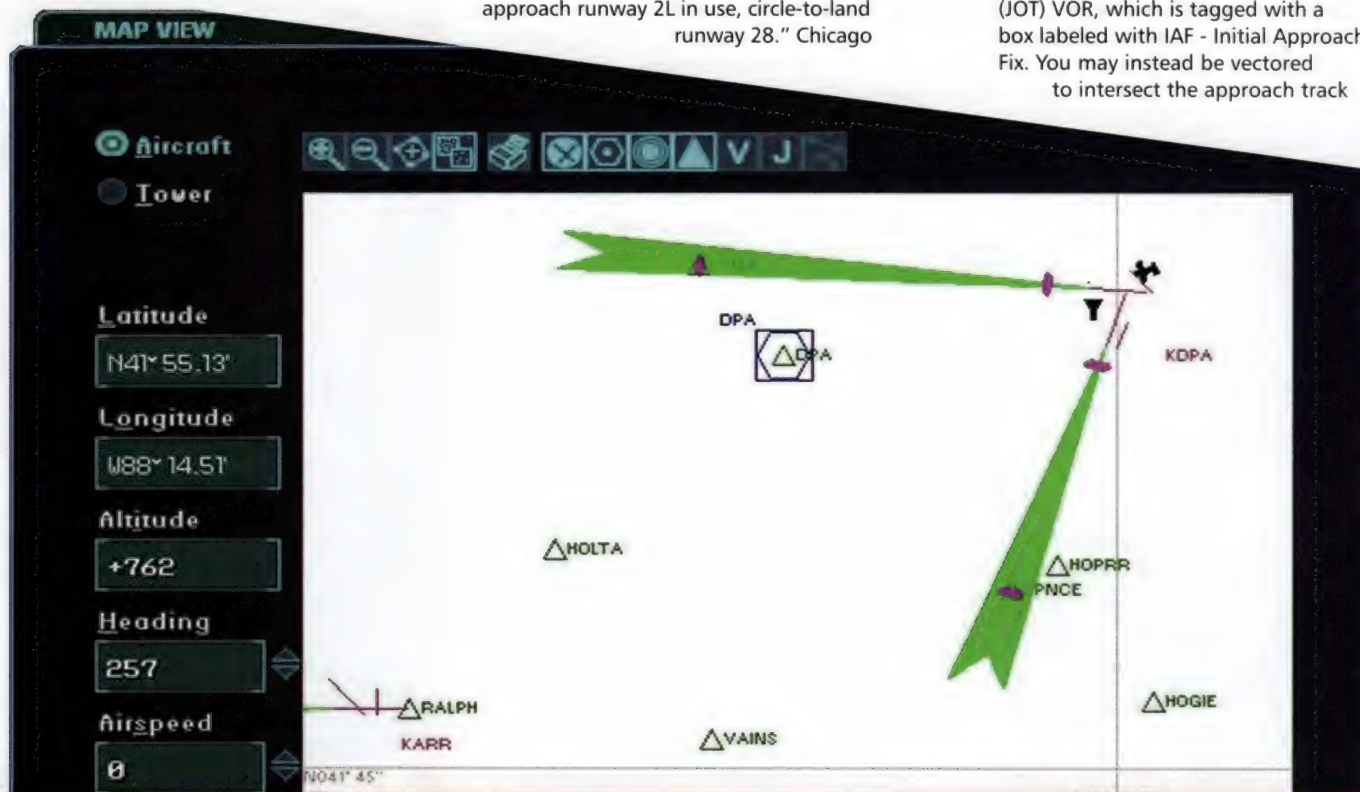
You can get a basic picture of an airport and its ILS approaches from the Flight Simulator Map View, by scrolling and zooming to a large horizontal view of the destination airport. If you open your Map View to Chicago - West Chicago - DuPage (KDPA) airport, you can see that it has ILS approaches to runways 1L and 10. If you click the triangular button for intersections, you can see that the respective final approach fixes for these approaches, with outer markers shown in magenta, are SPNCE and LYLLE, respectively, as well as the nearby DuPage (DPA) VOR. By clicking on the airport runway diagram in Map View, the Airport/Facilities Directory pop up dialog box appears, with all pertinent information. If you scroll to the end, you will find runway details and related ILS frequencies. In this case, the data in the simulator is slightly out of date, as the runway at KDPA was recently re-designated 2L.

Let's focus on the basics for the ILS approach to this runway. Then I'll mention the procedure involved in circling-to-land on another runway. Just before preparing this article, I flew from KDPA to Rantoul, Illinois (KTIP). With weather closing in, I filed and flew IFR for the return, and as I approached KDPA, I obtained the ATIS report. The approach instructions were: "ILS approach runway 2L in use, circle-to-land runway 28." Chicago

Approach vectored me for the 2L approach, and when I called Tower as directed.

The tower controller instructed that I would circle-to-land on runway 28. How did I do the approach and landing? First, we need to get the instrument approach chart for runway 2L. For the U.S., all instrument approach charts can be freely downloaded from the Echo Flight website listed at the end of this article. This website also contains taxiway diagrams for all U.S. airports, so online pilots can download applicable instrument charts and diagrams for all desired U.S. destinations. These charts are free because the U.S. National Oceanic and Atmospheric Administration (NOAA) furnish them. Notice the following features of this approach chart:

- In the upper left of the plan view, there is a table of applicable frequencies.
- the lower right of the plan view, there is a circular diagram that shows the Minimum Safe Altitude (MSA) of 2600 feet MSL within 25 miles of the DPA VOR.
- Focusing on the main part of the plan view, we see that the ILS frequency is 111.7 and the runway heading is 015°. By the way, all headings are magnetic, and don't forget to hit the "D" key periodically to reset your directional gyro instrument if your FS realism parameters include gyro drift.
- The "full approach" begins at the Joliet (JOT) VOR, which is tagged with a box labeled with IAF - Initial Approach Fix. You may instead be vectored to intersect the approach track



Map View scrolled and zoomed to show the instrument approaches to KDPA.

inside the FAF. Remember from the last issue that a useful mnemonic during the approach phase is P-T-A-C.: Position - where you are in relation to the initial or final approach fix, Turn - course to intersect the localizer, Altitude - to maintain until established on the localizer, and Clearance - for the designated approach.

- The approach continues along a course of 360° to the BOMER intersection, which can be determined by the 360° radial and distance of 10.7 miles from the JOT VOR, as checked by DME or by the crossing radial of 227° from the O'Hare (ORD) VOR. You would set the JOT VOR on NAV1, with 360° on the Omni Bearing Selector, and the ORD VOR on NAV2, with the OBS set for 147° To or 227° From the VOR..
- The Outer Marker (OM) is positioned at the SPNCE intersection by the lens-shaped symbol, and the middle marker (MM) is shown in relation to the approach track and runways, with another lens symbol.
- The Missed Approach track is shown, along with the subsequent holding pattern at the DPA VOR.
- With your simulator flying experience, you may have picked up the plan (or map) view aspects of the approach, but the profile view is unfamiliar to many simulator pilots. Looking at the profile view for the 2L ILS approach, we see "3000" along the 360° track from the JOT VOR to BOMER, meaning that you must fly at or above 3000 feet MSL.

- The approach continues with descent to no lower than 2800 feet after BOMER, and the course following BOMER is along the runway direction of 015°.
- For precision approaches (localizer and glideslope both being received), the Final Approach Fix (FAF) is shown before SPNCE by the lightning symbol, where the aircraft intercepts the glideslope at or above 2800 feet. Note that the glideslope at SPNCE is 2474 feet MSL elevation, so the intercept is before SPNCE. For non-precision approaches (localizer only - glideslope not being received), SPNCE is the FAF, as depicted by the Maltese Cross symbol, at which point you would descend to the Minimum Decision Altitude (MDA).
- In the vicinity of the Middle Marker (MM) is the Missed Approach Point (MAP). This is a bit confusing, because it's not a geographic point, though it appears from the dotted line track that it's at MM. Rather, for a precision

approach, the MAP is defined by the intersection of the glidepath with the pilot's decision height (AGL), or decision altitude (MSL). This is defined in the table below the profile view, as discussed below.

- The instructions for the missed approach are shown immediately above MM: "Climb to 1200 then climbing left turn to 3000 direct DPA VOR/DME and hold."
- The diagram also shows the distances between each main point of the approach, and the tabular chart on the lower right of the approach chart shows maximum times from the FAF to MAP at various speeds, for use with non-precision, VOR, and NDB approaches. Or for what might begin as an ILS approach, followed by loss of glideslope information. For non-precision approaches, the MAP is defined by either a fix, a facility, or by timing using the chart.

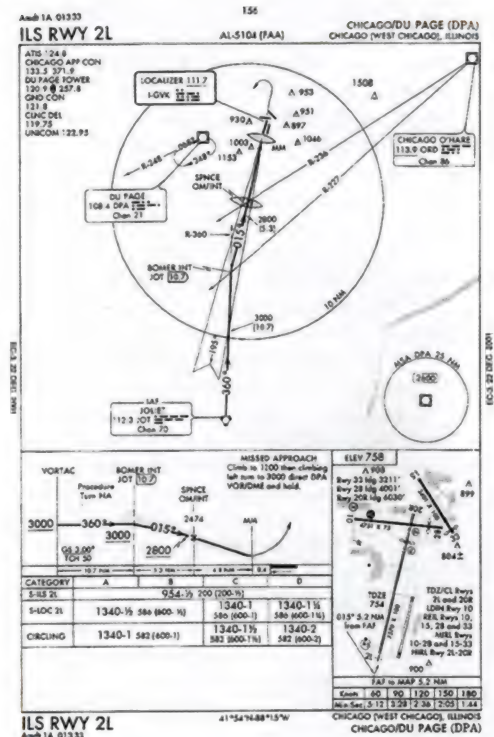
- In the lower right-hand corner, the chart also shows a diagram of the airport, along with runway dimensions, lighting, elevations, and other information. One important item is TDZE - Touchdown Zone Elevation, which is 756' in this case.

Remember that I mentioned that the most important points of an instrument approach are: "how low, how long, and how do I get out of here?" The second point is answered by the required decision altitude for precision approaches or by the table of maximum times to reach the MAP at various approach speeds for non-precision approaches. If the runway or other acceptable indications aren't visible, you must "go missed." The third point is answered by the missed approach procedure.

But the table directly under the vertical profile answers the first and foremost point. There are columns for type A, B, C, and D aircraft, as determined by a speed calculated by 1.3 times V_{so} (the approaching aircraft's stall speed with flaps down). Here is the table:

V _{so}	Category
90 kts. and below	A
91 kts. to 120 kts.	B
121 kts. to 140 kts.	C
141 kts. to 165 kts.	D
166 kts. and above	E

For example, my Piper Dakota has a V_{so} of 56 knots, and $1.3 \times 56 = 73$ knots, so my aircraft is category A. The table shows decision altitudes for categories A through D, and importantly, it shows

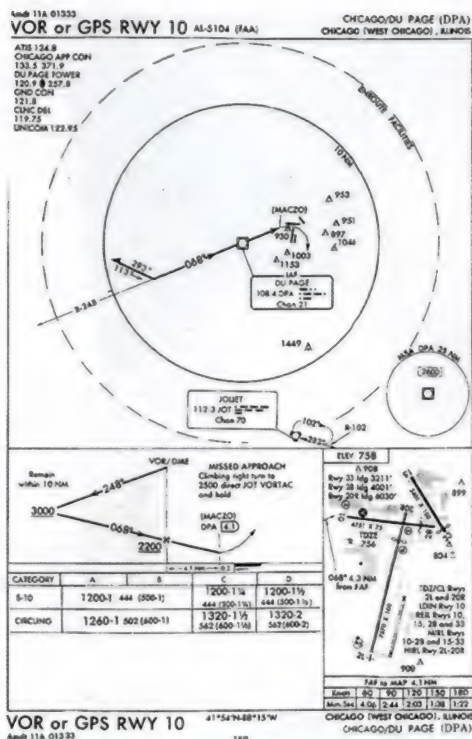


Approach chart for ILS runway 2L at DuPage (KDPA) airport - still shown as runway 1L in MSFS.

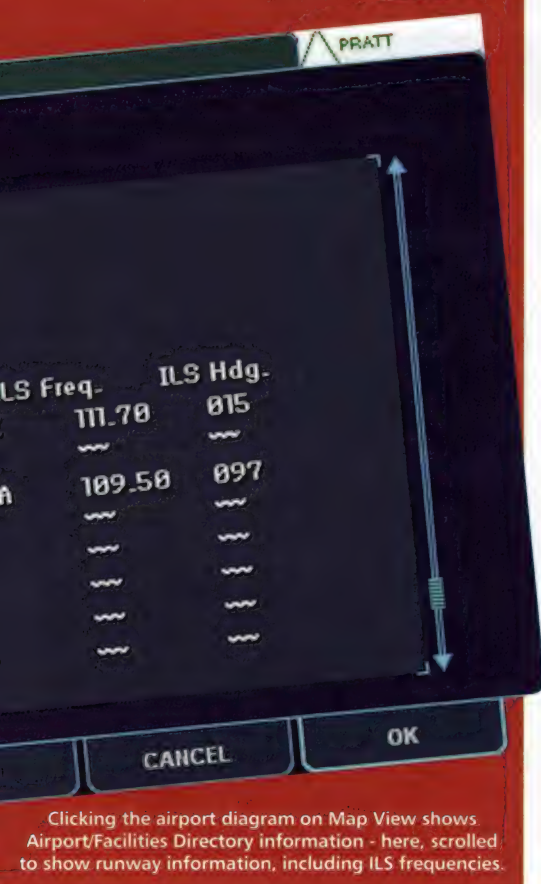
Facility Information

Latitude: **N41° 54.41'**
Longitude: **W88° 14.90'**
Elevation: **+758**

Runway	Length	Surface	ILS
1L	6700	Concrete	IC
19R	6700	Concrete	IC
10	4751	Asphalt	II
28	4751	Asphalt	II
15	3401	Asphalt	II
33	3401	Asphalt	II
1R	3300	Concrete	II
19L	3300	Concrete	II



Approach chart for VOR or GPS approach to runway 10 at DuPage (KDPA) airport.



visibility requirements. What you'll notice is that logically, greater visibility is required for greater speeds. Here are some examples for the KDPA ILS 2L approach:

- For a straight-in ILS approach to runway 2L, the decision altitude for all speed categories is 954' MSL and ½-mile visibility. The next number, 200, is the height above airport (HAA), which is 200 feet AGL.
- If glideslope information is not available (because it's not being transmitted or not received by your aircraft), the approach becomes a localizer approach, and the Minimum Descent Altitude becomes 1340' MSL, with ½-mile visibility, and HAA of 586' AGL for categories A and B, with same MDA and greater visibilities for categories C and D.
- If runway or wind conditions require circling-to-land on another runway, the MDA is still 1340' MSL for all categories, but the visibility requirements are increased further.

Remember that it is "better to be safe than sorry," so it is allowable to "go missed" before the decision altitude or MDA. Also, because of runway conditions, Tower may direct you to break off an approach early and go missed. The visual cues you must have to complete the landing in the real world involve seeing the runway or its markings, runway lighting, or other specified cues. But for online flying, you'll most likely see the disproportionately large runway lights as your first cue.

VOR and Other Approaches

In PC flight simulation, we tend to think only of ILS approaches. However, there are many other types of approaches. Most recently, there are now approved Global Positioning System (GPS) approaches. Many smaller airports don't have ILS approaches, or they may be out of service where they are installed. Also, as suggested above, you may receive the localizer signal without receiving a glideslope signal.

Actually, there are designated localizer-only approaches. Here's an example. Because of maintenance and runway construction projects at KDPA, both of the ILS approaches were disabled most of this past summer. When approaching on an instrument (IFR) flight plan in late August, with rain and thunderstorms in the area, the DuPage ATIS report indicated that the effective instrument approach was "VOR approach runway 10, circle to land on runway 19R." Though in this situation the weather was clear enough for me to declare "airport in sight" and make a visual approach, let's look at the VOR 10 approach plate. Suppose I had needed to make this approach and "circle to land" as indicated in the ATIS report.

From close inspection of the VOR runway 10 chart, you can see that this approach is moderately difficult because, unlike ILS approaches, there is no glideslope indication. And VOR signals are less accurate and precise than localizer signals. Most significantly, the approach involves flying away from the DPA VOR for 4.1 miles before reaching the Minimum Descent Altitude (MDA) at 1200 feet MSL (444 feet AGL).

With circle-to-land, the MDA is actually 60 feet higher - 1260 feet MSL. If I had not been able to see the airport and declare it "in sight," I would have made the approach to runway 10 by:

1. Flying the DPA radial 068° outbound
2. Descending to a minimum of 1260 feet MSL
3. After passing the DPA VOR, verifying that I then had the landing runway in sight
4. Heading north, to set up for landing on runway 19R (now renamed 20R).

I would have needed to keep the landing runway continuously in sight as I circled, else "go missed."

Flying VOR or NDB approaches away from the navaid is made difficult by the fact that the bearing radials expand as you get further from the navaid. The closer you get to the airport, the less precise is the bearing reference, and a slight deviation of the needle on the VOR instrument may lead you farther from the airport than is possible to see the landing runway.

By the way, the DPA VOR is also used with a westerly radial for a VOR/DME approach to runway 27 at the nearby DeKalb, Illinois airport (DKB). In that case, it's even more difficult, because you fly 14.9 miles out from the DPA VOR to reach the MDA.

As I complete writing this article at 2130 UTC on a Friday, the ServInfo program, reports that there are 326 pilots and controllers flying online with VATSIM and another 234 with IVAO! Lots of traffic in the air, and perhaps, lots of folks out there watching what you are doing.

I hope you've learned about instrument approaches and that your understanding is enhanced. Until the next issue, I'll see you in the air, flying online! →

More Information

Charts and diagrams are Available on the **Echo Flight** website at: <http://edj.net/cgi-bin/echoplate.pl>

The **ServInfo** program can be found at: <http://avsim.com/hangar/utis/servinfo/>,



iNternet Gateways

By Rod White

If you have two or more PCs in the home, and you want to get more out of your LAN (Local Area Network) setup, this article is for you. Or perhaps you don't have your network setup yet, but you acquired a second PC for Christmas. Networking them together is a very good idea. There may be a lot more computer power in your home than you might realize. You can share files, printing tasks, and if you have a broadband connection to the Internet, like a DSL or Cable Modem, you can spread that capability to your other system(s) as well. You can even use the LAN to enjoy your favorite flight/combat simulation or game title with a fellow enthusiast.

All of these scenarios can be addressed by some of the products we will talk about here, and thankfully, with the latest hardware you don't have to be an IT professional to set it all up.

The first thing you need to do is just a little bit of up-front planning. There are basically two different ways to go here: a software solution, or a hardware solution. Hardware is always the better of the two, but this route is usually more costly. A software solution costs less, but can be a little more daunting to configure. Also, going the software route, you must already have a LAN environment setup within your operating system.

Something else you may want to take a look at is your operating system. Both Windows 2000 and Windows XP, on the NT platform, are born for networking. The Windows 9X platform, to the contrary, is not. It is certainly possible to set up a LAN on Windows 98 or ME, for example. But you will likely end up using some unpleasant language and colorful metaphors in the process. So if you are new to networking, and have been weighing the pros and cons of upgrading to Windows XP, you now have a very big pro.

We are going to be taking a look at some of the options available to you, and give you a few suggestions that will make setting all this up a lot easier.

Sygate Home Network Software

Sygate Technologies Home Network is a software based Internet sharing application that also includes an integrated Internet firewall. Some of the other sharing applications on the market require an additional Ethernet adapter for broadband solutions. The second Ethernet card is usually required to connect the PC to the rest of the home network, via a hub or switch. Sygate's OneNic support now lets you use a single Ethernet card, which saves you a little money, and lets you avoid some of the configuration issues that can arise in dual-Ethernet card configurations.

This application also offers many of the same features of a hardware-based solution, like setting up a DMZ for Internet gaming, and PPOE support for allowing most DSL modems to login and get online without having to use proprietary login software applications.

Best of all, it's downloadable for free from their site, with a free 30-day trial to take it for a spin before buying it. At \$39.99 for a 3-user license it's an option that might be worth pursuing. Check their web site for more information, and to download the trial version.

Personally I prefer a hardware-based solution, but for the money Sygate Home Network is an inexpensive alternative to a Router for those who already have a home LAN setup.

Belkin Wireless Cable/DSL Gateway Router

Belkin has a wide variety of USB, networking, and home office products to offer. In recent years the area of networking is where they have been very successful with consumers. Their Wireless Cable/DSL Gateway Router is a new product for them. It combines the means to setup a network with standard Ethernet cards, Belkin wireless adapters, or a combination of both. This gives the PCs connected to it the means to share a Cable/DSL Modem connection to the Internet, and to take advantage of all of the other everyday LAN capabilities.

Setup is extremely simple, due to the very user-friendly documentation, which simplifies everything in steps. There are three standard 10/100 LAN ports on the back of the device. Each can accommodate a standard Cat5/RJ45 networking cable. This type of cable is used to connect standard 10, 10/100 or 100 Mbps (MegaBits Per Second) PCI or ISA Ethernet cards to a network.

The built in 3-port network switch makes sure each of the hardwired Ethernet cards have the proper bandwidth, based on the modem's connection speed. A switch is far more efficient than the average hub, which makes this feature a definite plus.



The Belkin Wireless Gateway Router

The single WAN (Wide Area Network) port is used for connecting your DSL or Cable Modem to the Gateway Router. If you have a modem that connects to your PC via a USB port, you may need to double check the back of it for an Ethernet port too, since some have both. If it has both, chances are you can just get a length of Cat5 cable and use it with this device.

If your Cable or DSL modem is strictly a USB device, then it can't be used with this product. A 5 Volt DC power supply is also included, so you'll need to have an open electric socket, or a spot on a power strip to accommodate it.

When all of the proper connections are made, you are ready to setup the hardware in Windows. The router is compatible with Windows 98, 98SE, Millennium, 2000, and XP. This is accomplished by typing in the Gateway Router IP address, which Belkin provides in the manual. This will access the

Gateway/Router setup program via your web browser, and from there the rest of the setup is outlined step-by-step in the manual.

You can even setup a DMZ, which allows for trouble free Internet Gaming from behind the firewall. The router provides a firewall to protect your PCs from outside hackers and other would be net-intruders. So the added security of a hardware firewall is a plus.

Once setup is complete, you can install the Belkin SOHO software that will setup the rest of the LAN, all by itself. Then you will have file and print sharing over the LAN, and everything needed to setup your Internet browser for the proper proxy settings.

We gave this hardware a whirl with a Verizon DSL modem (made by Westell), which uses PPOE authentication protocol to login. Since the Wireless Gateway/Router also supports PPOE, you will never need to login manually again, if the software dialer

that your Internet service provider gave you uses this protocol.

Adding wireless Ethernet adapters to your computers takes a few more steps. But thankfully, they have outlined this very well in the documentation too. We tried two of Belkin's USB Wireless adapters, in conjunction with the Wireless Gateway/Router, with great results.

Using wireless adapters simplifies the process of networking PCs together. All you need is a single USB slot open on each computer. There is no need to open up the PC and get out the screwdriver to install an internal Ethernet card if you go wireless. However, you will get much faster transfer rates using dedicated PCI 100 Mbps adapter cables, compared to a wireless solution like these USB wireless adapters.

But of course, going the wireless route may be the only option for many users, due to the design of their home or office. As far as wireless solutions go, this is

Belkin Wireless Notebook Ethernet Adapter





Belkin Wireless USB Ethernet Adapter

unquestionably one of the best that money can buy. Wireless solutions like these do conform to the newer wireless standards, so you will get an 11 Mbps transfer rate, at a range of 590 ft. from the receiver. Today's wireless adapters use DSSS (Direct Sequence Spread Spectrum) technology, so they shouldn't interfere with 900 MHz wireless phones like some of the earlier wireless networking solutions tended to.

If you're farther away than 590 ft., the transfer rate drops sharply. So the closer you are the better. But 590 ft. is more than an adequate distance to work with for most home network layouts. This new 11 Mbps standard is also fast enough for most every day tasks like browsing the Internet, accessing e-mail, downloading or transferring most files between computers, and Internet/LAN gaming.

When transferring huge files, such as video files, a hardwired solution with 100 Mbps Ethernet cards is the best way to

go. But most users are not doing such bandwidth-intensive tasks, so these 11 Mbps USB Ethernet adapters may be all you will ever need.

My only gripe would be that the 3 LAN ports provided might not be enough for some users. But on the plus side, having the means to purchase an optional USB Ethernet adapter makes adding another PC to this Wireless Gateway Router very easy to do.

In addition to the wireless USB adapters, Belkin also offers internal PCI wireless Ethernet cards and wireless notebook network cards. You can use any combination of the above with this Gateway Router. Personally, I think that the USB option is the best and most versatile. Most notebooks have USB slots these days, and all new PCs do as well.

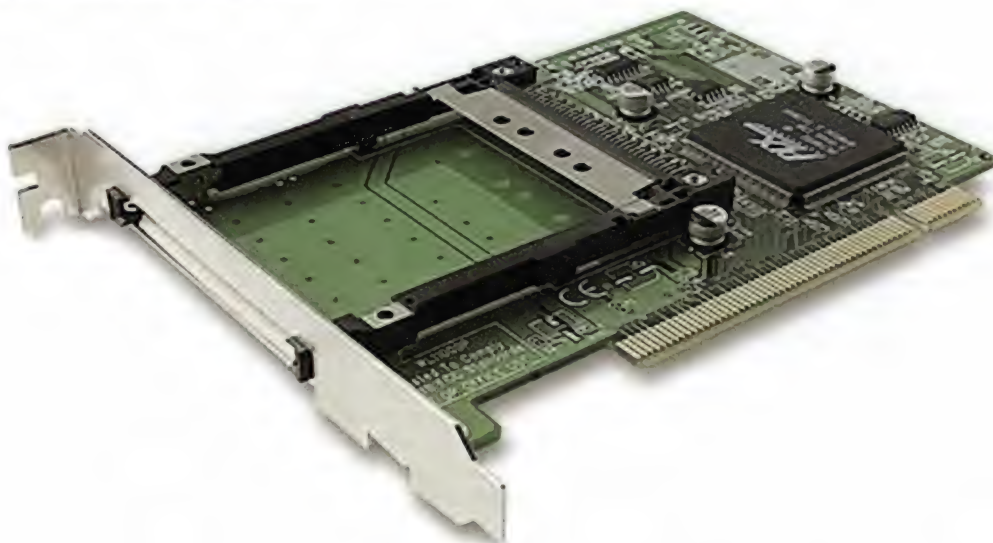
If you are looking for a way to enjoy the benefits of the multiplayer mode in FS 2002, this is a great solution. It will not only allow you to fly over the Internet with others, but

also, with your friends and/or relatives in your own home on any PC in the house over the LAN. If you have an existing network without the means to share your broadband connection, or if you had been planning on putting a home LAN together, either way this is a great solution to use as the foundation.

If you had planned on purchasing a switch or hub, you could just purchase the Wireless Internet Gateway Router instead, and gain the bonus of the broadband sharing capabilities, firewall protection and wireless connectivity.

While it's not the most inexpensive option around, it's definitely one of the best and easiest to setup. It carries an SRP of \$249 at Belkin's website. If you search around the web you'll find them for as low as \$175. The USB adapters run about \$100 direct from Belkin, but these and their other wireless devices run a lot less from the online retailers as well.

Belkin Wireless PCI Ethernet Adapter





The D-Link DI 704 Gateway Router

D-Link Home Ethernet Gateway

D-Link is a major player in the networking market, and their networking kits are outstanding options. If you're looking to get everything that you need in a single box to setup a home LAN with two PCs, then this may be worth pursuing.

We mentioned their DFE 910 kit in the August/September issue. The DI-704 Home Ethernet Cable/DSL Gateway + 4-Port Switch is the option to look at if you want to build or upgrade a hardwired home LAN that will enable sharing of a broadband Internet connection, without breaking the bank.

As the name implies, this Gateway comes with a built in 4-port switch. This permits the highest throughput speed, based on the connection speed, for all computers on the LAN. The four ports are of the Cat5/RJ45 variety, to accommodate 10/100 Mbps Ethernet cards. Just like the Belkin option we looked at, the setup and installation is very simple. You just type in the IP to the Gateway, log in to the setup menu, and from there the rest of the setup will be based on your individual needs and preferences. It's all laid out nicely in the documentation, so it's hard to mess up.

The means to setup a DMZ, to create VPNs (Virtual Private Networks), and PPOE support, is all there. The physical design is a little odd, with all of the LAN ports for your various PCs up front next to all the indicator lights, and the WAN port to connect your DSL or Cable Modem around back. It's not much bigger than the average D-Link hub or switch, and we replaced our 5-port switch with the DI-704. As it turned out, the DI-704 takes up no more space than the old setup.

The DI-704 also provides a firewall, so no outside hackers or would-be intruders can see each PC's true IP address, unless

you want them to by setting up a DMZ. There's not a lot of bells and whistles to mention here. But the DI-704 does what it's supposed to do, and does it amazingly well considering it's one of the most least expensive hardware options on the market.

If you have an existing 10 Mbps, 100 Mbps, or combination of the two, with four PCs or less, for \$89 you will be hard pressed to find a better hardware based solution for the money. This is by far one of the best, if not the best solution available for under \$100.

Summing it all up

You can see there are a lot of options out there, even more than what we covered, to allow you to get a network of PCs online. A software-based solution, like Sygate, is the cheapest way to go if money is tight, or if you just want to share your Internet connection with a PC or two. A 3-user license runs just \$39.99.

If you have a situation where the home/office design just won't allow you to lay Cat5 wire as needed to setup a proper home LAN, then there's no question that the Belkin solution is worth its weight in gold. What's more, if you want the most versatile solution out there, and you don't plan to need more than three hardwired PCs on the network, then the Belkin solution is unquestionably the one to look to. It will cost you, but you get what you pay for, and then some. Plus Belkin offers a lifetime warranty on it!

If you are not constrained from laying cable, or if you just need the speed, hardwiring a LAN is the way to go. The D-Link DI-704 is all that's needed for hardwired home LANs to share a single broadband connection to the Internet. It's also a solid foundation for a home LAN with a built in 4-port switch. At \$89, or less

if you shop around online, the DI-704 can't be beat.

So if you just want to network two PCs together, and haven't done it yet, then it's well worth it to consider a Cable/DSL Modem Gateway/Router like the ones we looked at above instead of a switch or hub. They all perform the same functions of a stand-alone entry-level switch, plus offer the means to enable the sharing of your DSL or Cable Modem to all machines on the network.

If you shop around you'll see that outside of the "network in a box" kits that are out there, a good 3-5-port switch will typically run you a few dollars less than the DI-704, but some are almost as much as the Belkin option. This makes a DSL/Cable Modem Gateway/Router a much wiser choice for users looking to setup a home LAN for the first time. Not to mention that setting up either of these hardware solutions is very straightforward and problem free, as long as you follow the instructions.

There's definitely a lot of fun to be had with a home LAN. More so once you've enabled the means to share a broadband connection to the Internet. You can fly lead or wingman in a favorite PC combat/flight simulation with a buddy, or the kids. Or you can play Internet games from any, or all machines. The possibilities are truly endless. ➔

More Information on these fine products is available through the manufacturer's/publisher's web sites:

Sygate Technologies: <http://www.sygate.com/>

Belkin: www.belkin.com

D-Link: www.dlink.com



TAKING FLIGHT at 2.2GHz

By Rod White

Just when you thought that the 2 GHz Pentium IV (P-IV) processor was the fastest CPU on the planet, Intel surfaces again to up the ante. This time with a 2.2 GHz offering. But the speed of the processor, measured these days in GHz (gigahertz), isn't the only thing that makes these new processors, code named "Northwood", faster.

Tech-Talk

The initial release of the 2 GHz Pentium IV processor in the fall of 2001 was based on the 0.18-micron manufacturing process, and offered 256 KB of secondary cache memory. These processors were code named "Willamette". The new Northwood 2.2 GHz and 2.0 GHz versions of the Pentium IV processor conform to the same Socket 478 motherboards as the previous P-IV processors.

In terms of voltage consumption, the older Willamette processors had a default core voltage of 1.7 volts, while the new Northwood processors consume only 1.3 volts. Less power consumption leads to better overall stability, due to less heat being generated.

The Northwood processors are manufactured using the new 0.13-micron process, and feature a whopping 512 KB of secondary (L2) cache memory on-board. Secondary cache sits next to the processor on the die, and delivers frequently accessed data to the processor. So having more cache memory definitely increases speed.

Additionally, the newer Northwood processors utilize copper interconnects, as opposed to the aluminum design of the Willamette processors. Since the conductivity properties of copper are better than that of aluminum, this helps to boost performance a bit. In terms of features, the Northwood processors make use of the same 400 MHz bus, and SSE/SSE2 instructions used in the previous Willamette processors.

A Closer Look At The Intel Northwood Processors

Size, Speed & Price

Due to the 0.13-micron manufacturing process, these new Northwood chips are smaller, use less energy, and cost less to make. But they definitely do not cost less to the average consumer. The P-IV 2.2 GHz is now the most expensive CPU on the market for the consumer-level desktop PC. At press time they run about \$550 on the street.

Due to the smaller size and less voltage consumption, these new Northwood processors are expected to hit 3 GHz and beyond. At a developer conference last summer Intel had already unveiled a 3 GHz Northwood processor. It ran Windows XP and various applications with amazing speed and stability. So with the Northwood we are most certainly bound for much faster speeds, well beyond the current 2.2 GHz mark. Before year's end don't be surprised if we hit 3 GHz, or very close to it.

Where The Rubber Meets The Road

We gave you a hands-on look at the Intel i845 motherboard chipset-based solution from MSI, with support for PC-133MHz SDRAM last issue. It's the most affordable route to go if you're looking to get into a P-IV based system. However, performance-wise it's not the fastest option. The P-IV, coupled with RDRAM and an i850-based motherboard, is still the fastest solution on the market. But the debut of Intel's i845D introduces the Pentium IV to DDR memory... Intel's way. And yes DDR motherboard solutions from SiS and Via have been on the market since the fall of 2001 for the Pentium

IV. But the i845D is the long awaited DDR motherboard chipset from Intel.

We looked at the D845BG motherboard from Intel, combined with a new Northwood 2.2 GHz processor, and 256 MB of DDR memory from Mushkin, kindly provided by Highspeedpc.com. This motherboard is of the Socket 478 variety, so it can be used with both Willamette and new Northwood Socket 478 processors.

Onboard it features digital audio by the way of AC'97 audio, combined with SoundMax with SPX. It features LAN support via the integrated Intel Pro/100 82562ET chip, and six USB 1.1 compliant ports. Six PCI expansion slots, and one AGP expansion slot are also provided. The 1.5-volt, 2x/4x AGP slot supports the latest AGP graphics cards. The ATA/100 IDE controller accommodates four drives and a single floppy drive. Most importantly, support for DDR is in place via two DIMM memory slots on the board. Up to 2 GB if DDR memory is supported. However, I found the lack of more than two DIMM slots is a little disappointing.

The onboard audio is a real treat. While I have never been a big fan of onboard audio, that's starting to change as I see better technology appearing these days on motherboards. For instance, this solution combined with the SoundMax software interface delivers 2, 4 or 6 channels of digital audio. It has support for EAX,

A3D, Direct Sound/Direct Sound 3D, and SPX. Even virtual mode using MS-DOS SoundBlaster Pro Emulation is in place.

During many hours worth of hardcore gaming and simulation action, the audio support performed great, and without incident no less. Granted it's nowhere near as good as a dedicated Thunderbird Avenger-based sound card, like the various "Edge" family of sound cards from Philips, or a high-end Creative Labs Audigy/SoundBlaster Live! offering. Nonetheless, if the addition of a dedicated audio card would put you over budget, the onboard sound offered here will more than get the job done. Overall I was very surprised by what the onboard audio had to offer in terms of quality, compatibility and stability.

The onboard LAN adapter also worked flawlessly, as I had it plugged into my home network in just minutes after the machine was setup. Being that it's a Pro/100-based, 100 Mbps (MegaBits Per Second) solution, the speed and reliability offered will more than suffice for everyday home LAN and Internet entertainment tasks. Best of all, you're not taking up a PCI slot with a stand-alone Ethernet card, but you still have rock solid LAN support on the motherboard.



Hardware Features

- Third Generation **Nvidia GeForce3** infinite FX (tm) GPU.
- On Board **64MB -4ns** DDR Memory
- Lightspeed Memory Architecture
- High-Performance Hardware Anti-Aliasing
- 350 MHz RAMDAC
- DVD software included
- AGP 4X/2X, AGP texturing and Fast Write supports
- Microsoft DirectX 8 and OpenGL 1.2 Optimizations and support
- Programmable Vertex Shader
- on-board **DVI** support
- Second Generation Integrated Transform and Lighting (T&L) Engines
- Drivers Support for Win 9X, Win ME, Win NT4, Win2K
- Leadtek **WinFox** system utility

Leadtek Value-Added features

10.4ns Memory onboard
Cooling Module

WinFast
GeForce3 TD



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We added a Leadtek GeForce 3 card, a P-IV approved 350-watt power supply, and threw it all together into a nice Lian-Li aluminum case. We were immediately wowed by how fast this thing is. In Microsoft Flight Simulator 2002, at 1024 x 768 screen resolution, 32-bit color, and at full detail, it was wickedly fast. Even with all of the detail options, like anti-aliasing, T&L, and Tri-linear filtering cranked to the maximum. And I was testing this in the most very densely populated scenery areas! Titles like IL2 Sturmovik also ran like a top, and it's widely known that any Quake III engine-driven titles, like Quake III, Voyager, or Return to Castle Wolfenstein run much better on a Pentium IV-class machine. Even compared to an Athlon XP 1900+. I observed the same results with this machine too.

All in all, I was very impressed by how well this new 2.2 GHz P-IV

processor performed with this setup. While we did not do any direct comparisons with the Athlon XP 1900+, or the newly released XP 2000+, I have a notion that, coupled with DDR memory, a Northwood 2.2 GHz system like this would be considerably faster in many instances. Actually, many of the initial benchmarks that we've seen pitting the AMD Athlon XP 2000+ against the 2.2 GHz Northwood, equipped with equal amounts of DDR RAM, have shown that in most gaming applications the Northwood/DDR combo is the clear winner. Not by any large leaps or bounds, but still the leader no less.

The main thing to remember is that the bandwidth hungry Pentium

IV processor doesn't kick into overdrive until you combine it with an i850-based motherboard and RDRAM. And with memory prices on the rise again, a solution like this should still be more affordable than an i850-based solution and an equal amount of RDRAM, plus the fact that RDRAM RIMMs must be installed in pairs adds even more to the cost. Performance-wise, this DDR system is no slouch either, and it's considerably faster than an i845 SDRAM solution with

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older PC-133MHz memory. It's actually not too far behind an i850 solution with RDRAM at all, and these days being second best is still pretty darn fast!

As it stands, this motherboard is an outstanding option to consider if you're in the market for a P-IV motherboard that supports DDR memory and Socket 478 processors. I also appreciate how Intel makes installation of the motherboard drivers and the additional bonus software a snap. Once you get the machine up and running for the first time, you simply drop the CD in your CD-ROM drive, and the Intel Express Installer takes over.

It will single handedly take care of the installation of the motherboard resource drivers, and the optional bonus software that's included, like Norton Internet Security 2002, Intel Express BIOS update, NTI CDMaker 2000, SoundMax with SPX, Macromedia Shockwave, RealPlayer Basic with RealPlayer Jukebox Basic and a few other little applications.

You can also select just what you want, or don't want installed. It's as easy as that, and it's a nice feature that makes installing a motherboard for first timers less daunting a task.

The street price for this motherboard is around \$150, which isn't cheap. But it does feature great multi-channel onboard audio and Ethernet capability. Plus, because the LAN and audio are onboard, it has more than enough free PCI expansion slots.

Bottom Line On The Northwood

Make no mistake about it, an i850-based solution combined with RDRAM is still

going to be faster than any i845D-based system, or any other DDR memory based motherboard solution out there for the P-IV. But the combination of the i845D motherboard, DDR memory, and the new Northwood processors should definitely help make the Pentium IV a more attractive, and affordable option for many who have overlooked the Pentium IV. And the D845BG motherboard is by far one of the best systems around if you're planning on taking the plunge!

As for the Northwood processors, I'm very impressed by these new 2.2 GHz and 2.0 GHz processors. The addition of 256 KB more of L2 cache, which bumps the total to 512 KB, really helps to make a difference in performance. Many of the early comparisons we've seen of the 2.2 GHz Northwood up against the 2 GHz Willamette processor show that it's clearly much faster in many different common benchmark applications. So if you can't afford the 2.2 GHz P-IV CPU, go for the 2 GHz Northwood model over getting an original 2GHz Willamette. You won't regret it.

Bang For The Buck

We will no doubt see some price-drops in the Willamette 2 GHz, 1.9 GHz processors from Intel. So before long there will be some deals to be had on the Willamette P-IV processors. I'm not one to go

around suggesting that you invest in older technology. But if the price is right, and you feel comfortable with it, then go for it.

The older Pentium IV chips are not at all "bad" options. But of course, it's always best to get the latest and greatest that you can if you have the money to spend.

AMD appears to still hold the best bang for the buck crown with their Athlon XP line of processors. But these new Northwood processors and the latest Intel motherboard based solutions are helping to slowly close the gap in terms of performance and price.

In most instances they're still more expensive than an AMD based solution. But when it comes to stability, most IT and networking specialists usually stick with Intel. I have never had any stability issues with any of my AMD-based systems, outside of some USB issues with early Via chipsets. But Intel has dominated the server sector because of their reliability and overall stability. That says a lot right there about Intel products.

They're not pulling off any groundbreaking feats with the Northwood, but they have once again raised the bar incrementally. In doing so, they have also increased the speed stakes again, far beyond where anyone else has gone. One has to respect that. →

More **Information** on the hardware Rod used in this setup can be found on the Internet:

Intel web site: <http://www.intel.com/>

Leadtek GeForce 3 card: <http://www.leadtek.com/geforce3/gf3td.htm>

Lian-Li aluminum case: <http://www.lian-li.com/english/f.htm>

Mushkin DDR memory: <http://highspeedpc.com/>



Commander 115TC

for FS 2002 From Flight Sim Developers

By Phil Paschutine

REVIEW

Typically, my reviews of commercial and shareware titles are primarily meant for readers with no Internet connection, and whose sole means of information is Flight Simulator World magazine. It is an almost impossible task to keep track of all the novelties being released on the Internet and thus, until now, I was not too familiar with the work of Flight Sim Developers (FSD). Even though FSD has been around for quite some time.

Based on the two FSD aircraft I have tested (Super Cub and the Commander 115TC), I am convinced that other aircraft designers who had, up to now, achieved somewhat of a monopoly in commercial aircraft add-on sales, will need to be much more inventive to preserve their position. They must now consider FSD a serious competitor, and in most cases, FSD has already surpassed them.

FSD planes are general aviation (GA) aircraft, designed for flight simmers that are tired of only seeing the umpteenth version of the Mammoth XYZ airliner add-on being offered. I wish I had a dime for every Airbus that has been released since FS 5 days. These planes are being offered to both newbie flight simmers, and of course, to all of the experienced, diehard "small is

beautiful" virtual GA pilots.

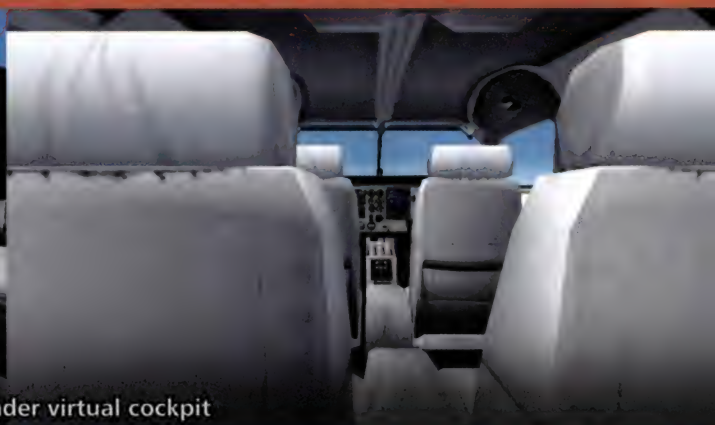
For the time being, FSD aircraft are only available via Internet download. If you do not have an Internet connection, I hope for your sake that this aircraft will soon be available in a boxed version, or you will be frustrated big time from not being able to fly it. The download file is over 13 MB, and once unpacked, requires 35 MB of available hard disk space.

Installation & Documentation

The first step is to download the file to your hard drive, and execute it while still connected to the Internet. The installation program takes you to a registration page. Once the secure credit card transaction is processed, you will be allowed to proceed



The FSD Commander virtual cockpit



Main instrument panel



Undercarriage and wheel detail of the FSD Commander 115



Throttle quadrant

"You will find my name in the **beta tester section**. Whenever possible I ask for betas of the product I will review. This allows me to be better acquainted with the **product**. In doing so, I may come across some bugs that I happily **report** to the authors. This does not affect my review in any way".

Phil Paschutine is an independent reviewer. **Tim Dickens**, Managing Editor for Flight Simulator World Magazine, **created** the instrument panel for the FSD Commander.



Radio stack



Lower panel detail

with the installation, and a registration key will be given to you. You will need this key if you ever need to reinstall the Commander 115, so keep it in a safe place.

The installer should automatically locate your FS2002 folder and install its files into the proper subfolders. If it does not, you can browse to the root Flight Simulator folder. At the end of the installation process, you can view the POH (Pilot's Operating Handbook), which is in HTML format. The POH includes:

- A history of the aircraft.
- Panel diagram with legends and operating instructions.
- Authentic Commander 115TC Performance specifications, including V-speeds, takeoff procedures for both normal and short fields, and airframe operating limitations. The specification part has plenty of information.
- A direct link to Support, and the main page of the FSD website.
- A Credits section with direct e-mail links to each of the authors.

This aircraft was tested on a 1.4 GB CPU, 256 MB RAM, and a 22" monitor. The graphics card was a Kyro II 3D Prophet 4500 64 Mb.

Instrument Panel

I have to hand it to the FSD folks. The panel is highly readable on a 15" monitor, at whatever resolution you chose! Crisp letters and numbers, and in the simulator, the gauges are quite readable in both regular and full-screen modes. All of the gauges are accurate reproductions of the real-world instrument panel, as it is delivered from the factory. The throttle quadrant, lower panel and radio stack are available via pop-up window icons on the main panel.

The lower panel displays the familiar switches for magnetos, lights, electrical, pumps, trim, and parking brakes. The lower panel also has an Amp/Voltmeter and a fuel totalizer with three modes. Fuel mode gives indication of fuel pressure and fuel flow. GPS mode displays fuel to destination and fuel reserve to waypoint. This mode also displays the waypoint identity. In totalizer mode, you display fuel consumption and remaining flight time at current fuel flow.

My only criticism here is that adding some flood lighting effects to the switch

panels would improve nighttime readability, and enhance realism. The switch lettering is illuminated, but the controls themselves are rather difficult to see.

Here is a novelty for you...the throttle quadrant has a bus fuse panel, with fuses that rotate and can be opened if you click on them. This bus panel actually works, so if you remove a fuse, you will lose a critical system!

The virtual cockpit is every bit as functional as the 2D panel, meaning that all the gauges work. The yoke is responsive and very accurate in its movement. As is the case with all FS 2002 aircraft, there are limitations to the virtual cockpit rendering and functionality. Virtual cockpit technology is not very well implemented in FS 2002, and no SDK information is available to developers. Sadly, we will have to wait until the next version of the simulator before we can see any magic in this realm.

The Nav/Radio stack is the star instrument of the Commander. Please bear in mind that whether in this aircraft or any other, some instruments such as the Nav/Radio stack come with many gauges. So you may not be able to read all the small faceplate lettering unless you choose a full screen resolution of at least 1024 x 768.

The radio stack has six separate units: audio panel, NAV1, NAV2, ADF, transponder, and autopilot. You must read the manual for operating instructions. The autopilot is a faithful reproduction of the real one. The NAV 1 radio includes a visual display with a compass rose, and depending on your choice, a NAV 1 bearing needle, a waypoint bearing needle, or both. You can also superimpose a Course Deviation Indicator (CDI).

The Nav and GPS switches control the autopilot, and when you load a flight plan it is automatically copied to memory. Click the waypoint button to display waypoint identity, bearing and remaining distance. If you click on the GPS button, the autopilot will automatically follow the GPS heading. All buttons have a small green visual indicator that light up when active.

Aircraft with a "wow" factor

The Commander 115 TC comes in two liveries; a Factory Demonstrator in white-blue-silver, or the Special Edition in white-

black-gold. Each has a slightly different panel. An RMI and a radar altimeter in the Special Edition replace the VOR2 and ADF gauges in the Factory aircraft.

Jim Goldman of FSD has rendered the exterior of the aircraft in wonderful detail. You can see all of the rivets and connecting hoses, and the 3d wheels are very well done. Go above 10000 ft. and you will see the pilot breathing with an oxygen mask. Pilot looks familiar? Yes it is Tim Dickens, this magazine's Managing Editor! But, whatever happened to that gorgeous gal that flew the Super Cub?

Ground maneuverability and flight dynamics in general are excellent. This is really no surprise, since Steve Small is part of FSD. Steve has created the best GA flight dynamics available since FS 5. The aircraft responds well to any yoke input so that flying is a breeze. It is well balanced and does not require constant trimming.

The kneeboard checklist is based on real-world procedures and numbers, and if you follow it, it will keep you busy. The sound sets are nicely done. Ever hear a Lycoming engine start? The sounds that come with the FSD Commander are much more authentic than the default simulator sound set.

The Commander Aircraft Company has had a little more than just a quick look at the FSD Commander 115 TC. It seems they helped FSD a lot. In case you are wondering how realistic this aircraft is, the credits section of the manual reads: "Commander Aircraft Company management and personnel have test flown this Flight Simulator aircraft and have stated that they have verified it to be as accurate a portrayal as is possible within the limits of the Flight Simulator program."

Conclusion

All aspects of the FSD Commander 115 TC, including the instrument panel, aircraft model, sounds, and flight dynamics are 100% authentic. At \$15.00, the price of this fine add-on is dirt-cheap. What is not dirt-cheap is the fine craftsmanship that went into the making of the FSD Commander 115 TC. The aircraft respond well to yoke inputs and is right on the numbers. I can only highly recommend the Commander 115, and if you do not get a kick out of flying this awesome bird, then I would suggest switching to macramé. →

More information

Authors: Flight Sim Developers (FSD)

Web site: <http://www.fsd-international.com/>

You can read more on the Commander 115 at: <http://www.commanderair.com/>

Price: US\$15



IL-2 Sturmovik

By Rod White

REVIEW

When it comes to WW II era combat simulations, we've had more than our fill of European theatre titles, and we have had slim pickings on everything else, particularly eastern front simulations. What may very well have been some of the greatest air battles of WW II, between the Soviets and the German Luftwaffe, has been completely overlooked.

Thankfully, Oleg Maddox of Maddox Games, a Russian developer, and Ubi-Soft have finally come through with IL2 Sturmovik. Development of this title actually began over four years ago, and it started out as a simulation of just the IL2 Sturmovik aircraft. Way back then I recall watching Oleg post little bits and pieces of concept art, and initial 3D-object renderings of the cockpit every so often at his website for the game.

At the time the market was flooded with WW II combat simulations, and flight/ combat simulations in general. So I never thought it would ever take flight, thinking that there were few prospects in an already crowded market for a title based on an aircraft that most westerners have never even heard of. Five years ago no publisher would even consider taking the chance, so for a while there it was forgotten about. But Oleg persevered.

Eventually he made some new alliances, added more planes, and changed some of the initial gameplay elements. What we have today is a far better product than IL2 Sturmovik could have ever been if it had debuted a year or two earlier. This project had started out under Blue Byte's wing, but they were gobbled up by Ubi-Soft, as was SSI, which explains why the box has an SSI look about it.

The Aircraft

You can take flight in more versions of the Sturmovik than you might imagine. In addition there are early MiG and Yak aircraft for the Red Army, plus Messerschmitt 109s and Focke-Wolf 190s for the German side. Talk about variety! There are about 31 aircraft in all, most of which are variants, and many have never been depicted in a simulation before. Each one is historically accurate for the year that it's flown in the program.

The Combat Environment

While it doesn't model the entire theater of conflict, it does model locations like Kursk, Moscow, the Crimea, Stalingrad and Berlin in great detail. The action in Career Mode consists of taking flight in 1941 as a Russian Army pilot, or as a German Luftwaffe fighter pilot. Aside from Career Mode, you can play many pre-designed Single Player missions.





One of the many German plane variants



Evasive action!



Defending an airbase in the cold, cold winter



Ubi-Soft's Ubi.Com interface



Amazingly detailed industrial regions!



Bombs away!

There is also a very powerful Mission Editor, which has the ability to create entire campaigns or just single missions. Granted it's not the most intuitive editor around, but very few mission editors that are this powerful are user friendly.

Due to the power of the Mission Editor and multiplayer support, the replay value for IL2 is out of this world! There are already many 3rd party enthusiasts out there hard at work on more full-blown campaigns for the simulation. Another option for getting in the air and shooting things quickly is the Quick Mission builder, which is setup very much like the ones found in the classic ATF and USAF series from Jane's. You can pick the plane you want to fly, select a ground objective and a few other parameters if you like, and be flying in just seconds.

Graphics

Down below or at altitude the terrain and surroundings look absolutely magnificent in this simulation. Instead of just going the DirectX route, IL2 runs under both Open GL and DirectX 8, and either way it looks gorgeous.

Resolutions as high as 1280 x 1024 are supported. But be forewarned if you plan on running even 1024 x 768 in 32-bit color, with detail levels turned up. You will see a big performance hit. Best results will be obtained with at least a GeForce 3 or Radeon 8500-class 3D-accelerator, and a 1.2 GHz or faster processor with a hefty amount of memory onboard. All of the eye candy will definitely cost you, but trust me; it's well worth it. Don't let that scare you away if you're on a mid-range machine. If you tone the detail down and drop the screen resolution to 800 x 600, it also runs well on a Duron-class 850 MHz machine with a GeForce 2 MX-class card.

In the eye candy department, IL2 truly aims to please. Each and every plane is accurately detailed, complete with proper articulation of all control surfaces! Explosions are hot and fiery looking, and the smoke effects are also well done. Down below, ground targets look as convincing as the planes do in the air, which is really not the norm in simulations. Typically, the plane that you fly looks much better than anything else. But in IL2 everything looks the part. Tracer fire looks the part. Explosions look the part. Tanks, and all of the other objects in the game look the part. Weather effects like rain, snow, and 3D clouds are also breathtaking. Everything in IL2 is truly exceptional visually!

Complete industrial regions are represented like never before in a combat simulation. You will see railways, massive warehouses, even large smoke stacks puffing away. Blowing things up in an industrial region in IL2 is more gratifying

than flying a bombing run in any other simulation I have seen! The overall damage modeling, and particularly the gradual damage are outstanding. IL2 visually depicts realistic damage to a degree previously unseen in any other combat simulation for the PC.

The 3D-cockpits are also meticulously recreated in stunning detail. No longer is Jane's WW II Fighters the standard for 3D-cockpit art in a WW II combat/flight simulation. Even the rear gunner cockpit is outstanding in the 2-seat version of the IL2. I think it is fair to say that IL2 Sturmovik has set the new standard in 3D cockpit art for both general aviation and combat flight simulation. You can even hop in the backseat and let the AI (Artificial Intelligence) fly the plane, manipulate the rear gunner seat via the mouse, then left mouse-click to fire on enemy aircraft that are sneaking up on your six!

Immersion

Speaking of AI, expect a challenge when taking on the AI planes in IL2. Even at some of the lowest levels of difficulty, the AI pilots are very good. It's a real treat to swoop down in the middle of an AI tank battle, or to see shells go off in mid-air as the AI triple-A fills the skies with big black clouds of smoke. Watch out, some of them are very good shots too! Thankfully the AI wingmen are equally as competent. Overall I'd say that the AI in IL2 is as good as it gets. So good that you'll find yourself playing many of the missions over a few times before completing them.

You also have a plethora of realism options to toggle on or off, so customizing some of the flight model realism and other options to your liking isn't a problem. With respect to flight modeling, IL2 represents each and every aircraft very well. There is a superb sensation of flight present when swooping down on the enemy ground units. Considering the IL2 was Russia's WW II-era "Tank Buster", the sensation of whisking over the terrain at breakneck speeds is a must, and IL2 truly delivers.

In the way of audio, IL2 is very unique. You will hear radio chatter in both Russian and German. Many have wondered why they didn't use English, but it's a Russian vs. German conflict scenario being depicted, and personally, I like it how they did it. So what if I can't understand them. English sub-titles are provided to figure it out. That's good enough for me, and most people seem to agree. It adds a little something more to the overall immersion factor, more so because it's done very well.

There's nothing worse than being subject to terrible voice acting by a guy doing a very bad job of portraying a foreigner in a simulation. In IL2, real Russians are doing

the voice acting, and it shows. In the end all of this audio-realism helps to portray a very convincing experience.

Online Support

Multiplayer support works well for both Internet and LAN, and cooperative multiplayer support is in place. Ubi.com is Ubi-Soft's online gaming service, similar to Microsoft's Gaming Zone, and is a free service. So finding someone to fly with shouldn't be much of a problem.

Thankfully, with the Mission Editor one can even create multiplayer missions! Actually there's already a tool out there to allow you to fly randomly generated cooperative multiplayer campaigns! With the IL2 Gen you can create single player, or cooperative multiplayer campaigns in seconds. And you can even manipulate many of the parameters. It supports up to 32 players head-to-head, or 16 players cooperatively over the Internet or via a LAN.

Conclusion

IL2 Sturmovik is definitely different. And in this case, different is good. This is particularly true now, considering there hasn't been very many combat simulations released at all in the last year. Best of all, this isn't yet another European theater driven title. The eastern front conflict has been completely overlooked by simulation developers, until now. But even if the market were flooded with a variety of WW II-era combat simulations, IL2 would still stand out on its own. It is truly one of the best WW II-era combat simulations ever released.

Not only is it unique in that it offers players a chance to fight WW II from another side of the conflict, but it offers outstanding, up to date DirectX 8 and Open GL visuals. In addition, there is the immersive sound, a wide variety of planes to fly, challenging AI and missions to take part in, solid multiplayer support, and outstanding 3rd party support right out of the gate. IL2 will be on the hard drives of combat/flight simulation enthusiasts for many years to come. I can only imagine what the 3rd party forces may dream up for IL2 in the weeks, months and years to come.

Oleg Maddox and Ubi-Soft's hard work has paid off. They've produced a classic WW II-era combat simulation in IL2 Sturmovik. Don't hesitate at all to pick this one up. →

More Information

Publisher: Ubi Soft Entertainment

625 Third St. 3rd Floor
San Francisco, CA 94107

Phone: (415) 547-4000

Publisher web site: <http://www.ubi.com>

IL2 web site: <http://www.il2sturmovik.com/>

IL2 Gen web site: www.il2center.com



Comanche 4

By Rod White

REVIEW

NovaLogic's original Comanche title was a groundbreaking game when it was released in the mid 90s. Although it brought most systems to their knees in the performance arena, its voxel-based game engine gave way to breathtaking visuals that truly conveyed a sense of depth of your surroundings when taking flight. You felt like you were truly dipping down into valleys and up over hillsides, due to the way that the display engine rendered things in a way the non-3D accelerated pixels could not. But it was only when Pentium-class machines were unleashed that we were finally able to enjoy all that Comanche had to offer at full detail.

Regardless of the advanced graphics, the title was never really accepted among the diehard simulation enthusiast crowd. They just did not care for Comanche's game-like qualities. Of course, one could easily argue

that it was impossible to fully simulate the flight modeling and weapon systems of an aircraft that did not yet exist. After all, the prototype of the real Boeing/Sikorsky RAH-66 had not even taken its first flight. But it was apparent that Comanche was more of a game than a simulation. This observation was based mainly on the way that the aircraft handled, and how it could decimate the enemy with every single shot fired,

Make no mistake, though, Comanche was revolutionary for its time. NovaLogic's patented voxel-space technology was definitely ahead of its time. While it wasn't a true simulation, it was still a lot of fun. So much fun that it has sold millions of copies to date.

In the ensuing years, NovaLogic milked their voxel-space technology as much as they could. When 3D-accelerator cards first hit the scene, they were still trying to tell us that voxels were better, and continued to make voxel-based games like Comanche 3 Gold, Delta Force, and Delta Force 2.

But in reality 3D-accelerators do nothing to accelerate the rendering of voxels, making it impossible for NovaLogic to capitalize on the increased horsepower end users were adding to their systems.

As 3D-accelerated games showed how powerful the technology had become, NovaLogic started tinkering with display engines that could be 3D-accelerated. Titles like F-22 Raptor, F-16 Multirole Fighter, and MiG-29 Fulcrum were examples of this. And now their Comanche series has made it into the 3D-accelerated world with the release of version 4.

Advanced Graphics

When trying to describe how Comanche 4 looks, the most appropriate word I can think of is "breathtaking". Even at first glance Comanche 4 looks as good as any A-title, first person shooter on the market. And it is quite possibly better than most any other flight/combat simulation out there as well.



Fast movers on the prowl



Third Person tank busting action



A rail yard never looked better on the PC



A hot time in the old city tonight!



Paving the way for a daring escape



Smokin'



If you sunk some cash into a DirectX 8 3D-accelerator card, then you're in for a treat. Support for advanced DirectX 8 features, such as multi-texturing, vertex and pixel shading, and Transform and Lighting are all in place. Running on a GeForce 3-class card at 1024 x 768 screen resolution (or higher) is a sight that Comanche players of days gone by could only dream of. That doesn't mean that it looks bad at lower screen resolutions either, and even on a 32MB GeForce 2 MX-class card it looks and plays well at 800 x 600.

When hovering over water the displacement effect is astounding. The same is true of the dust that it kicks up when hovering low to the ground. And if you look closely you can even catch trees swaying and troops reaching for their hats to hold them to their heads while at a hover!

Explosions are equally as Hollywood-like, which makes for some great fun. There's nothing that goes farther in promoting the suspension of disbelief than seeing a big explosion when you destroy a target, and in Comanche 4 all explosions are very convincing. Comanche 4 takes the series back to its roots by making it a fast-paced, action-packed thrill ride in the RAH-66 attack helicopter.

What's missing is a good 3D-cockpit, so the situational awareness factor is pretty limited without the means to pan around the cockpit or look out the canopy from the pilot's point of view. This feature is conspicuously MIA in Comanche 4.

Immersion Quality

By design, you can engage Comanche 4 from within the cockpit from a first-person view, or from outside the chopper positioned behind it in a 3rd-person view. That might lead one to believe that this isn't really a simulation. In a sense it is, but then again, it isn't.

There are plenty of things going on to hold your interest, and put you into their world. As in all previous Comanche titles, the terrain is filled with rolling hills, deep valleys, and hordes of hiding places to pop up from and wreak some havoc on the enemy from behind. A variety of different locales are depicted, ranging from lush green jungles to arctic frozen tundra. All of the hotspots are lavishly detailed, with groves of trees and densely populated cities. Like the terrain, the 3D objects and structures are amazingly detailed.

In the audio department, there is nothing at all to complain about with respect to radio chatter and sound effects. Actually, the radio chatter really helps to enhance the missions, and makes you feel like you are part of a larger operation.

NovaLogic makes the claim that the

flight model is "scalable", but with or without slip control and limited cyclic range selected under Options the aircraft appears to handle the same.

In the way of weapons modeling, the faithful representation of the real-world systems is very much in question. For example, I highly doubt that the real Comanche can lock onto a single foot soldier wielding a shoulder launched Stinger missile, and annihilate him with a Hellfire. Also, the cannons can lock on and fire at targets with unbelievable accuracy and speed.

One can only conclude that all of this is outside the constraints of what the real Comanche could do. Is this a bad thing? To be completely objective about this, while they've cut some corners in the way of realism, they have managed to create one of the most entertaining military/flight/combat titles released in years.

The Missions

One thing that the Comanche franchise always did well was provided challenging, and downright fun missions to fly. Comanche 4 is no different. While I'd rather have seen a full-blown campaign, with linked missions, the single missions are very challenging and a lot of fun. They are presented in six different categories, most of which can be played out in any order. I can tell you that these missions offer hours worth of white-knuckle, seat-of-the-pants flying, with plenty of ducking and shooting action. In all there's 30-missions worth of action to take part in, and a mission editor is also provided so you can make your own.

If variety is the spice of life, then Comanche 4 is a twice-grilled jalapeno stuffed enchilada with hot sauce oozing out the sides. All of the mission have multitudes of bad guys thrown between you and your mission objective. Some are so challenging that you'll definitely be replaying them a few times over before being successful. Escorting Special Forces to insertion points, protecting bases from enemy attack, following drug smuggling thugs to their base of operations, providing cover for Blackhawks, escorting a limo to the airport -its all in there. We can definitely say that there is no lack of diversity in the scenarios provided by Comanche 4.

Connecting Your Hardware

NovaLogic designed Comanche 4 to take full advantage of state of the art flight gear, for those who have it. But the casual enthusiast needs no more than a keyboard and mouse. That's right; Comanche 4 can be flown with just a keyboard and mouse

like Quake III, a force-feedback joystick, the top of the line CH or Thrustmaster gear, even a combination of all of the above.

My only gripe would be that Comanche 4 has a problem with some USB flight gear. I had no luck at all enabling throttle support with my CH USB Throttle, USB Fighterstick and USB Pro Pedals setup. Also, others have had similar problems with other manufacturers' sticks in Comanche 4. However, I was able to plug in a new Saitek force-feedback stick and play without incident.

Surprisingly, using just a keyboard and mouse was even enjoyable. They even offer the option of using the wheel on most mice today for raising and lowering altitude! Being a flight/combat simulation enthusiast, I can't see playing that way everyday. But it's nice to see that they've opened up the door for newcomers who may not have a quality joystick or flight gear to fly with.

Online Flying

Online support wasn't working at all when it hit store shelves, but they have since remedied that. You can now go online and play team, head-to-head and even cooperative games over the Internet on Novaworld, or via a LAN. And as expected, the Internet support works great over Novaworld. The cooperative multiplayer mode, with you and your buddies against the AI is a blast! This alone makes Comanche 4 worth getting.

Conclusion

Comanche 3/Comanche Gold tried to appeal to the hardcore enthusiast, but Comanche 4 throws realism out the window to provide players with a non-stop roller coaster ride, with more bad guys than you can shake a joystick at. Explosions are bigger and more beautiful than ever before, and there is a lot of astounding DirectX 8 eye-candy. On top of that, there is enough action packed missions to make playing through each and every one of them an absolute must.

No getting around it... the hardcore enthusiast crowd may turn their noses up at it. But if any one of them would sit down with it for 5 minutes they couldn't deny that there is a great deal of fun to be had within Comanche 4. The other thing to remember is that NovaLogic never once tried passing it off as a hardcore combat simulation. From the start it was intended to be a fun and action-packed "light combat simulation" of the RAH-66 Comanche. There's nothing at all wrong with that, and if you're looking for a title to kick back and have a lot of fun with, Comanche 4 is definitely the one to scribble down on your list of combat titles to pick up. →



THE DREAMFLEET 737-400

for Microsoft Flight Simulator

By Al Pelletier

REVIEW

While participating in the beta program for Flight Simulator 2002, I came in contact with one of the DreamFleet 2000 team member for the 737-aircraft/panel, Lou Betti. Everyone on the beta team was raving about this add-on. Curiosity came over me, and I proceeded to the DreamFleet web site to check it out. I saw some pictures of the 737 panel there, and immediately wanted to own this add-on. At that time, the 2002 version wasn't to be available for 2 months, so I patiently waited.

On the day of the 2002 release, I obtained the full package, started the installation process, read the manuals, downloaded extra aircraft liveries, and of course, took to the air in the 737. I'll try and cover the main points, but unlike the other reviews that I have written, I'll give you a hint at the conclusion right here at the beginning: this package is awesome. No other word can describe it!

What & where

Greatest Airliners is marketed by Flight One Software, and is available either by download (approximately 45 MB download size) or by ordering a boxed CD. I opted for the download. It is a rather large file, but since I have broadband, it only took a few minutes. If you don't have a cable or DSL modem, you might want to order the CD version from Flight 1. There is also a 15 MB patch to download that makes the 737 compatible with FS 2002.

The software package really includes four different programs:

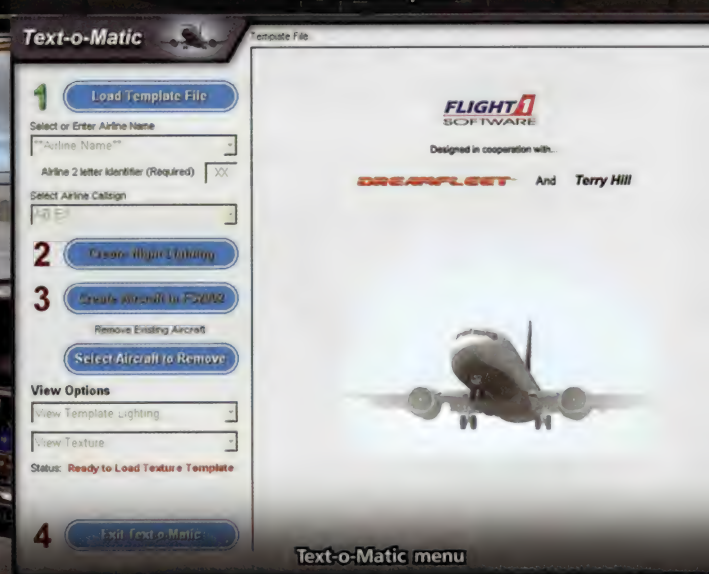
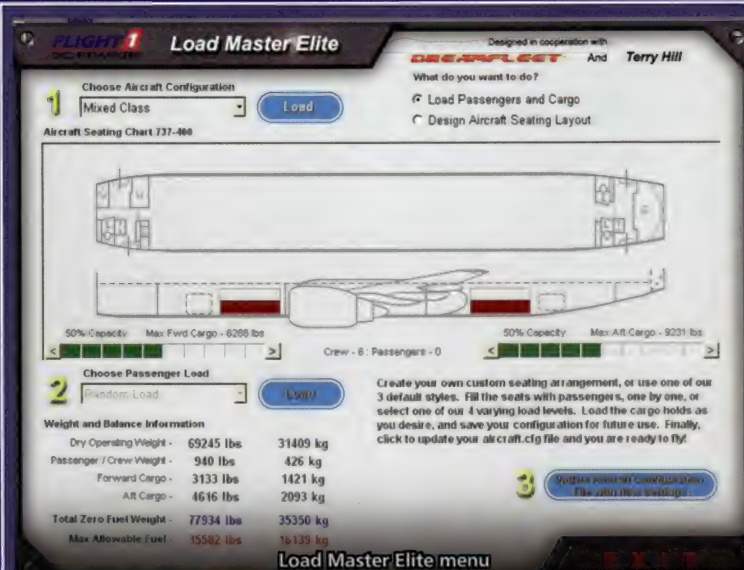
1. The 737 panel/ aircraft, in one livery
2. 737-400 Flight Management System (FMC)
3. Text-O-Matic. A great little program that allows you to add different liveries. I am not totally certain but I believe that there are over 300 liveries now available.
4. Load Master Elite, which allows you to assign the weight and balance to your airplane. You select the number of passengers, cargo, fuel etc..

Installation & Literature

The installation instructions made everything easy. The downloaded version requires that you maintain your Internet connection so that the installation program can confirm the product key. You have the option of installing the package in either FS 2000 or FS 2002.

The documentation is well written and easy to follow. I am typically not impressed with the documentation that comes with FS add-ons, but I really do not have any issues with this part. You must read the 737-400 manual addendum included in the installation archive. It is in PDF or text format, and printing it is a good idea, so that you don't have to keep changing directories on your system to review it. I also printed the 737-400 Quick Reference Manual, and the included title: "Flying the 737, with Marcos Arranz" (A 737 pilot).

There is also a full "normal ops" and "emergency ops" check list available for



Greatest Airliners 737 in default livery, taking off from O'Hare



More Information:
 DreamFleet web site: <http://www.dreamfleet2000.com>
 Flight One Software web site: <http://www.flight1.com/>
 SRP: \$29.95 US

download at the DreamFleet web site. The Quick Reference Manual is well written, in plain language, and is very informative. It covers everything from the history of the 737 to the operation of all the systems, and it has an added bonus of being fun to read. I still go back to it from time to time.

There is a lot to learn since this is as close to a real simulator as you can get on a PC. You'll even learn about cabin altitude pressure settings, along with a wide range of systems common to the 737. It can get complicated, but you can also keep it simple by selecting a programmed start mode, in which the airplane will be in a pre set configuration.

There are actually four different modes for you to choose on start-up:

- **Off:** Starts with all systems shut down upon launch of the simulation, providing for a "cold and dark" cockpit
- **Gate:** All systems operational, and the aircraft is ready for push back and engine start.
- **Taxi:** All systems operational with engines running.
- **Last:** Allows a custom configuration by saving the state the panel is in when the switch is pressed.

So it is up to you as to how far you take it!

Panel/Cockpit Features

The cockpit has a number of realism enhancements not always found in Flight Simulator aircraft, and some very advanced features:

- The panel is photography-based, and is 100% authentic.
- Full APU and engine start procedures on the overhead panel.
- Very functional instrumentation, overhead panel, center console, throttle quadrant, and FMC
- Autopilot Flight Director System (AFDS) and Flight Mode Annunciator (FMA).
- Mode control panel (MCP).
- EFIS, Flight Director, and moving map
- Ground Proximity Warning System (GPWS)
- Master Caution Annunciation System
- Fully operational Flight Management Computer (FMC) with built in navigation database.
- Night Lighting.
- Traffic alert and Collision Avoidance System (TCAS), which allows you to know the proximity of other airplanes while you are flying.

The Aircraft

The level of realism is outstanding. The visual model is 32 sided, with very accurate looking moving parts and control surfaces. Of course, they went out and got one of the best plane designers in Terry Hill to do the flight model. He spared nothing on this one. Terry is one of the prime developers for this product and you can see his standard on everything. On the aircraft themselves, I

cannot say enough. Although most of them were designed for FS 2000, I found them to have very realistic Flight Dynamics in FS 2002.

Miscellaneous Extras

Text-O-Matic plainly said, is a great little program. You download some airplane bitmap templates, and from those you can make a new livery for FS2002. There are also a couple of unpainted (blank) templates available, so that you can try your hand at painting your own. This program is a favorite of mine, and I might add: "the icing on the cake". Just take a minute and go to the DreamFleet website and check out all the different liveries available. I am also finding dozens more on the big Flight Sim Internet sites. Just do a search for "DreamFleet" and up they pop. I even found the time to paint one for my Virtual Airline in less than one hour!

Load Master Elite allows you to be your own loadmaster, and select different combinations of freight, passengers and fuel. I used this for programming my aircraft load while flying for my virtual airline. This is a great little add-on that you'll be using all the time. Change your passenger and cargo load, and it automatically adjusts your weight and balance.

General Observations

There are a total of ten individual panel windows, which can be brought into view on command. The panel windows are in addition to the twelve "outside view" windows that are also provided. For the most part, the panel windows contain the gauges and controls necessary to operate the 737, while the outside view windows contain interior photographs of the cockpit and aircraft interior. There is also a Landing View panel, which is an outside view window that contains an additional installation of the Autopilot controls.

The View Control Panel (VCP), located at the bottom left of the Main Panel, makes it easy to select any of the individual panels windows and to select some of the outside views. You can also use the keyboard to access any of these and all the different keystrokes are included. For me I find using the keyboard faster, but the VCP is easy to use.

There are 10 panel windows:

- Main panel
- View Control Panel
- Yoke
- Throttle Quadrant
- Gear/Flap panel
- Center Console
- Auto/Flight/Announcement/System (AFAS)
- Overhead Panel
- FS 2002 GPS
- Flight Management Console (FMC) that can be operated and programmed outside of Flight Sim

There is also a center button for all the different views. Some of the views are just eye candy, by adding a photo realistic picture of the interior of the plane while looking outside. It is a nice touch though. The main panel is well laid out and very functional. Everything works. I like the fact that nothing is there just for looks. The numbers on all of the gauges are sharp and easy to read. I didn't find anything fuzzy or out of focus. And this goes for all of the different panel windows. Special attention has been given to details, even on the Gear/Flap panel.

One of my favorites, since I have dual monitors, is the Throttle Quadrant. I have never seen anything so accurate in Flight Sim. It includes the speed brake lever, flap lever, elevator trim wheel, thrust reverser levers, TOGA switch (Take Off Go Around), trim indicators, engine start levers, and parking brake lever/indicator. Best of all, it all works!

The Center Console has, in addition to the radios and transponder, a fully operational Electronic Flight Instrument System (EFIS), which works in conjunction with the Electronic Attitude Direction Indicator (EADI) and the Electronic Horizontal Situation Indicator (EHSI).

Even the windshield wipers do work! I can't go into describing every switch, gauge and functions of all of the panel windows. This would take about 75 pages of writing, and it is all in the Quick Reference Manual. I guess I can just say that every effort has been made to fully duplicate the real plane. The Autopilot works great and doesn't have that "rock and roll" feeling that the FS2002 default 737 has.

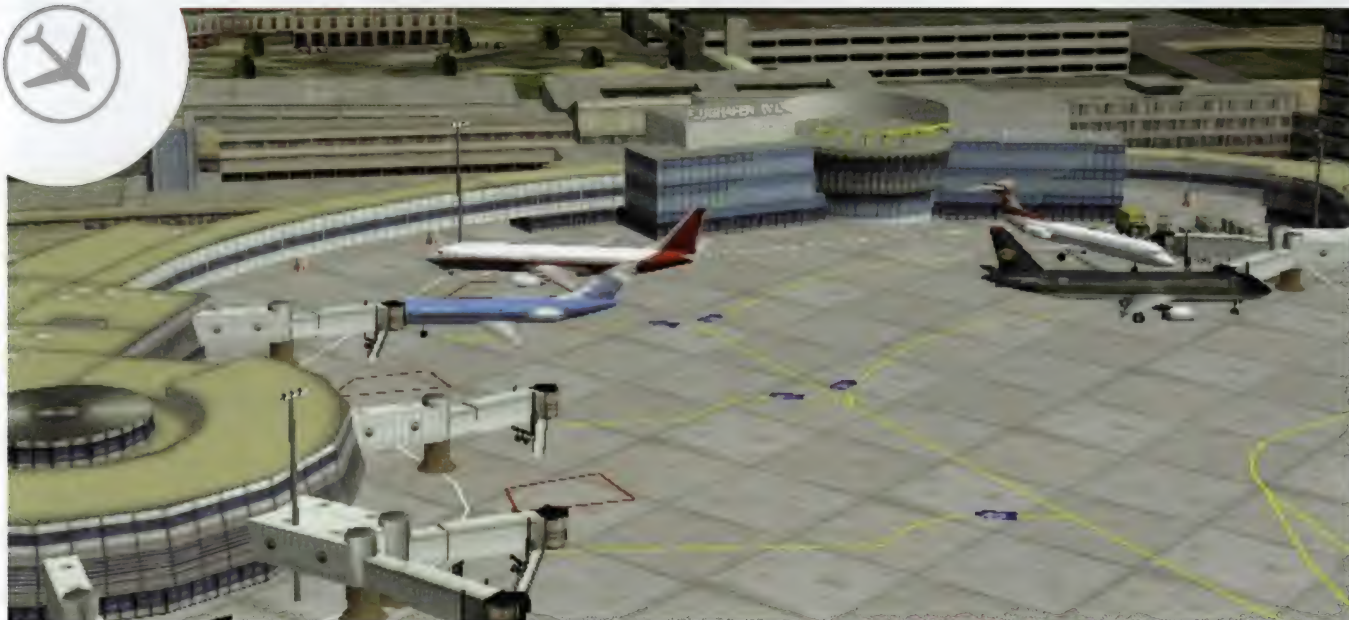
Even while I am writing this and doing more research, I keep finding new features that I hadn't noticed before. I think it will take me another 100 hours of flying it in order to experience it all. But that's the fun of it.

In closing

I'll let you know that this is rare coming from me, but I give this entire package a 10 out of 10. In our present technology, and at this price, it doesn't get better than this. The panel is nothing short of spectacular, the aircraft is great, and the extra add-ons like the FMC, the Text-o-Matic and Load Master Elite could be programs sold on their own. On top of that, the end-user aftermarket has created hundreds of new liveries that you can add. The whole deal kicks Microsoft Flight Simulator up another notch.

The only downside, and it is a small one, is that it demands a lot out of your computer. Wouldn't hurt to run this on a 1 GHZ+ CPU, with plenty of system RAM, and a state-of-the-art video card. However, I did run it on a PIII-800 satisfactorily.

Many thanks to the DreamFleet team for such a superb job! →



Austrian Airports

Scenery for FS2000 & FS2002 From Flight X Press

By Phil Paschutine

Several years ago, there was an "attempt" at designing Austrian airfields, called Austria Pro, which simply did not meet commercial standards. Although it utilized "photorealistic textures", the airport design and general scenery construction had been botched, big time. And unfortunately, nobody else stepped up to produce some quality Austrian scenery...until now.

I have come into possession of Austrian Airports, released by a different designer and publisher. Just about every day since the release of Microsoft Flight Simulator 2002 I have seen an add-on rehash, or hastily put together scenery set designed with the FS2002 beta. So as I installed Austrian Airports, I wondered if it was just going to be more of the same, sent in hopes of a friendly review.

Installation & Documentation

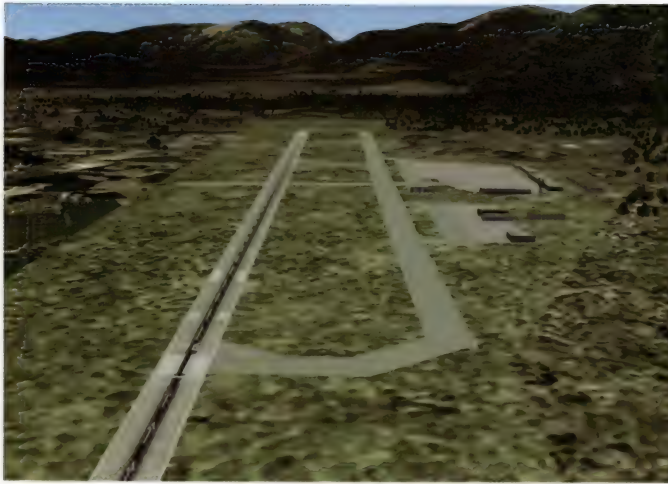
Austrian Airports can be installed for either Flight simulator 2000 or 2002. Each of the 14 airports can be installed separately, allowing you to install any other third party airports in the region. But we'll wager that once you've seen these, you'll want to keep them all.

A full install requires 98.5 MB of available hard disk space. The scenery.cfg file is modified to include the 14 airports in the scenery library, so there is nothing the user needs to configure except for the detail setting sliders in the simulator. Just set everything to maximum, and enjoy the eye candy! Frame rates did not seem to be a big issue with Austrian Airports on my system, but if your CPU and video card are a bit low in power, you will need to set

the simulator's detail settings according to the performance results you need.

The documentation consists of two manuals, totaling 146 pages, in German, English and pigeon French. I have said many times that charts for flight sim add-ons should be included in loose-leaf form. Charts bound in a volume are of no use to anyone, and are a source of frustration for serious flight simmers.

To top-off my list of gripes with the documentation, the area map on pages 46-47 is barely readable. The remaining 85 IFR and VFR charts, including area charts, airport charts, SIDs and STARs diagrams are quite readable. The CD also includes a myriad of patches and updates for various Flight Simulator add-ons.



Before (left) and after - the default FS 2002 scenery compared to the Austrian Airports enhancement.

The Scenery

The question for any scenery developer is: will people accustomed to buying major airport titles want to buy such an add-on? Count how many commercial versions of major airports there are...enough to fill an entire shelf. Yes folks, flight simming, and aviation in general, are not just limited to the major airports. Small airfield packages are every bit as important!

I can think of quite a few smaller airfields with very perilous approaches. Have you ever attempted landing on a STOL runway, after having your underside gouged from the local trees because you overestimated your height above the treetops? Quite a thrill, I can tell you! Our flight sim environment is not just

made of major airports, and we need more airfield packages.

The airports for Austria in the default scenery are quite barren, and this package replaces them with much more detailed renditions. The author, being an architect, is very familiar with building construction and layouts. This gives the scenery a dimension of depth and reality. 3D objects like road signs, trees, cows grazing, vehicles, and all manner of small details makes each of these airports a place you will want to revisit.

You will not find underlying textured polygons delimiting the airport area. The whole airstrip rests on the default textures. Some will like this technique, while others may dislike it because they cannot see

a well-delineated airport perimeter on approach. But of course, in real life you cannot always see a well-delineated airport perimeter on approach.

Since many of the smaller airports do not allow traffic after sunset, do not expect fully lighted airports at these locations. But what you will see are different kinds of virtual nightlife, and the local chalets seem quite inviting. The airports are all done in authentic detail, and most have the real building textures. And even more impressive, they are not blurry like some add-on packages I have seen.

The result is that every object is pleasant to look at, and although some military buildings are generic, the designer has taken great care

Voslau Airport - sometimes placing the runways in a new location results in some odd visual effects



Vienna Schwechat Airport - overhead





Buildings at Vienna Schwechat Airport

in all the smaller details. Ground markings, animated ground personnel, and other nicely done structures are present everywhere.

For the time being this package does not have any Artificial Intelligence (AI) traffic, other than what is there by default. Experience has shown us that the default AI traffic and third party scenery objects do not mix well, and depending on how you look at them, can result in some pretty funny or hair raising situations. This is because third party buildings and taxiways are not quite placed at the same position. When Microsoft releases the AI SDK, we will see airport specific AI traffic. Until then, all you can do is set your FS 2002 Options/Settings/ATC/Traffic Percent slider

to zero. Otherwise, look out for that heavy barreling down on you!

Also, since Microsoft has not released a scenery SDK, progressive taxi instructions are valid only for the default FS 2002 airports. There is simply no way for a 3rd party scenery designer to create them. And unfortunately, some of the default FS 2002 airports have the wrong reference points. So when scenery designers create new airports, they pretty much have to live with this for the time being.

Gripes and Complaints

I have looked at each airport in detail, and was perplexed when I came across some glaring design irregularities at Vienna.

Vienna is quite nice, but suffers from two problems: taxiway bends and bad joints. The bends where runways meet are not very accurate compared to the real-world airport. And I cannot understand why the yellow taxiway lines are not properly joined.

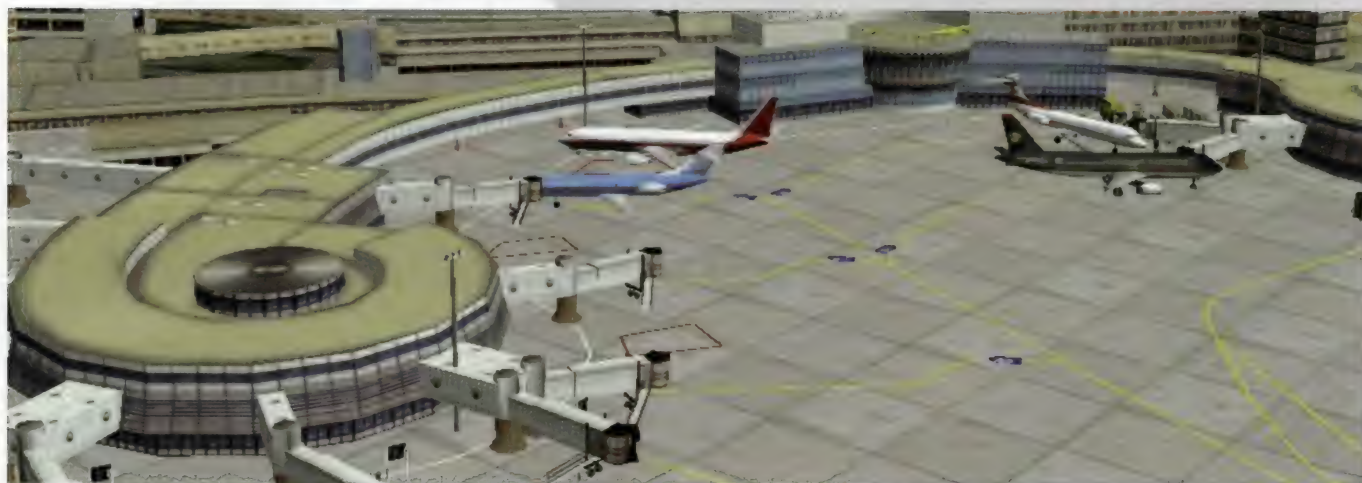
I did ask the publisher what he intended on doing to solve the two problems. He replied that these issues are going to be addressed soon. Am I to think that the designer does not value his customers, or has sacrificed accuracy for "the easy way out"? I really do not believe this is the case here. But at this price, which is quite high, the customer is entitled to thoroughly tested scenery, and not a half-tested beta. The publisher states:

Klagenfurt Airport



Zell Am See Airport





Terminal complex at Vienna Schwechat Airport

**"In General: bugs
- if found, will be
patched and
offered for
download at our
web page."**

Also, it seems that the Airport Facility Directory (AFD) files were missing from the current distribution disk, so you will be using the default Europe AFD files. The

result of this is that you may find yourself at odd startup locations, as is the case with the runway threshold at Wels.

Conclusion

Apart from the design issues outlined, and the missing AFD files, the 13 remaining airports are a real delight. They are well rendered, with a true Austrian atmosphere. So with respect to the quality of the scenery, Austrian Airports is top notch. But as far as the bottom line goes, € 42.95 (about \$38.00 US) for an airport add-on is, quite frankly, quite a bit overpriced. Hopefully the publisher will review their pricing policy and reduce this. →

More Information

Author: Stefan Rausch

Publisher: Flight X Press
<http://www.flightxpress.de>

Distributor: Aerosoft GmbH
<http://www.aerosoft.de>

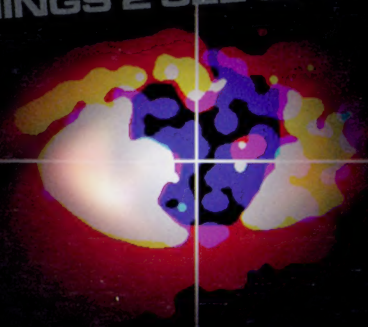
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Graz - A civilian airport



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The new page is at:

http://www.tooby.demon.co.uk/FS2002/FS2002_Assistant.html

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